

*January • 1952*

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**METAL PRODUCTS MANUFACTURING**  
FROM RAW METAL TO FINISHED PRODUCT



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**I**N PERIODS of shortages it becomes more important than ever to anticipate future wants and prepare for them. "Ceramic" maintains constant inventory control of chemicals and, on the basis of past experience, does everything possible to maintain stocks of all essential items. Where demand exceeds supply, its policy continues to be one of fair apportionment among those who have depended upon us in the past.

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Antimony, Black Needle	Cobalt Sulphate	Molybdenum Compounds	Sodium Fluoride
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Barium Chloride	Epsom Salts	Nickel Oxide, Black	Sodium Silico Fluoride
Barium Molybdate	Feldspar	Nickel Sulphate	Superpex
Bentonite	Flint	Opax	Talc
Bone Ash	Fluorspar	Potassium Bichromate	Tin Oxide
Borax	Gum Arabic	Potassium Carbonate	Titanium Dioxide
Boric Acid	Gum Tragacanth	Potassium Nitrate	Urea Crystals
Cadmium Carbonate	Iron Chromate	PotassiumSilicoFluoride	Whiting
Cadmium Sulphide	Iron Oxides	Powder Blue	Zinc Oxide
Calcium Carbonate	Lead Chromate	Pyrophyllite	Zircon, Milled
Cerium Hydrate	Red Lead	Rosin	Zircopax
Chromium Oxide	Litharge	Rutile, Powdered	Zirconium Silicate
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**CERAMIC COLOR & CHEMICAL MFG. CO.**  
NEW BRIGHTON, PA.

# January • 1952

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LONDON GUARANTEE BUILDING  
Michigan Avenue at Wacker Drive  
THE HOME OF

**Finish**

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A trade publication devoted to the interests of the manufacturers of home appliances and allied metal products. Covers plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on metal finishing.

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	Page
THE EFFECT OF MILL TOLERANCES ON THE FINISHED SHEET METAL STAMPING by Stanley R. Cope .....	21
THE STEEL SUPPLY PICTURE FOR 1952 by R. F. Sentner .....	26
SOLUBILITY OF REFRACTORY MILL ADDITIONS IN FIRED GROUND COAT ENAMELS by James H. Healy .....	27
FLOW COATING AT MAYTAG by Max Schmiedeke, Jr. ....	31
HOT SPRAY APPLICATION OF LACQUERS AND PAINTS....	33
A CHALLENGE TO THE CONSUMER DURABLE GOODS INDUSTRIES by R. A. Weaver .....	35

## FEATURES

THE FINISH LINE .....	19
SUGGESTION BOXES .....	13, 64

## INDUSTRIAL NEWS

STEEL KITCHEN CABINET MANUFACTURERS HOLD FIRST ANNUAL MEETING ..	36
NATIONAL ELECTRICAL MANUFACTURERS' 25TH ANNUAL MEETING.....	39
STOVE MEN ATTEND WINTER MEETING AND MANAGEMENT CONFERENCE ..	42
INDUSTRY NEWS AND PERSONALS .....	47
FIFTH NATIONAL HOME LAUNDRY CONFERENCE .....	48

## MISCELLANEOUS

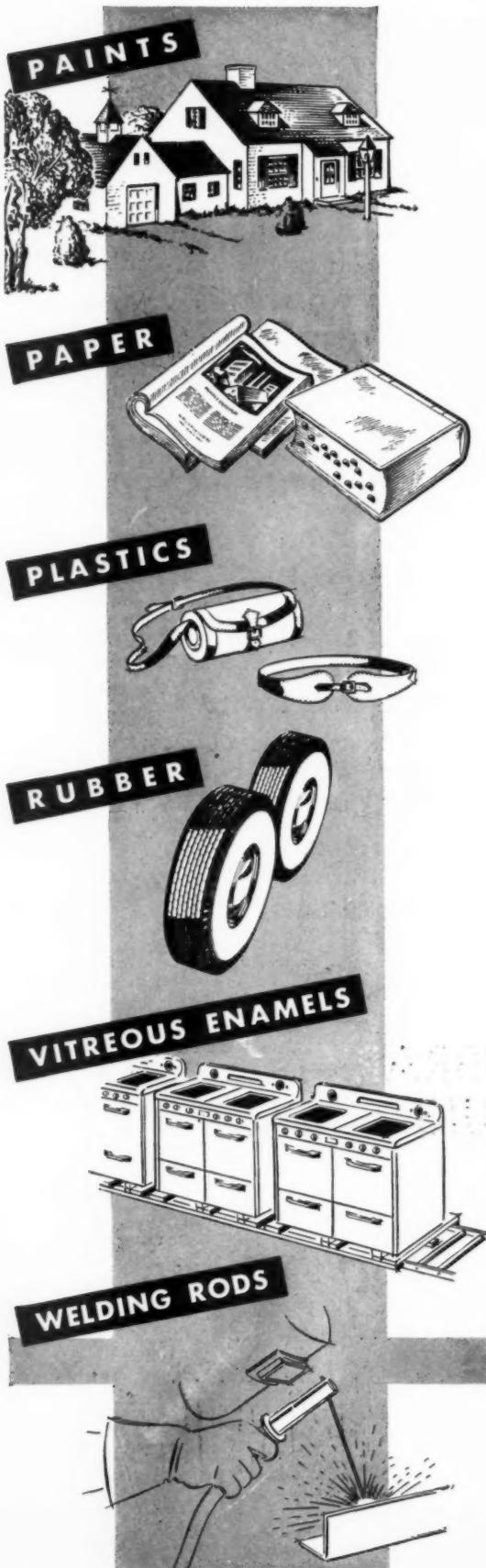
INDUSTRY MEETINGS .....	5
NEW PRODUCTS .....	63
ADVERTISERS' INDEX .....	84

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	Page
PLASTIC TOOLING AIDS DEFENSE WORK by Gilbert C. Close	21
SEVEN BARRELS BRIGHT HONE OR DEBURR	
110 DIFFERENT PARTS by Floyd Hubbard	27
THE USE OF NEPHELINE SYENITE IN PORCELAIN ENAMELS	
by John E. Cox and Ralph L. Cook	30
THE OUTLOOK FOR ELECTRICAL PRODUCTS	
by W. J. Donald and A. J. Nesti	32
BUSINESS OUTLOOK FOR GAS APPLIANCES	
by Edward R. Martin	33
NEW DESIGN FOR MASS PRODUCTION OF SYLVANIA LIGHTING FIXTURES	35

## FEATURES

FROM THE EDITOR'S MAIL	10
PHOTO SALON	13
SUGGESTION BOX	17
SAFE TRANSIT SECTION	65

## INDUSTRIAL NEWS

COPPER SUPPLY PICTURE TO IMPROVE DURING LATTER HALF OF 1952	17
WINTER HOMEFURNISHINGS MARKET	37
WASHER, IRONER, DRYER MANUFACTURERS HOLD ANNUAL MEETING	43
INDUSTRY NEWS AND PERSONALS	51

## MISCELLANEOUS

INDUSTRY MEETINGS	8
NEW SUPPLIES AND EQUIPMENT	86
NEW INDUSTRIAL LITERATURE	87
ADVERTISERS' INDEX	88
CLASSIFIED ADVERTISING	88

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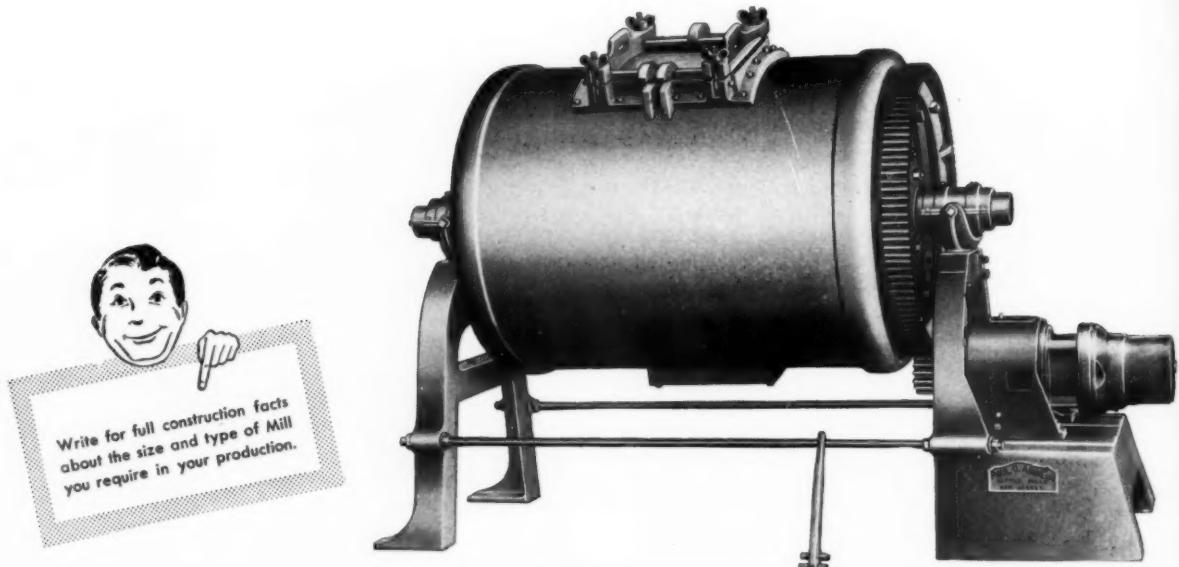
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## CURTAIN WALLS AS RELATED TO PORCELAIN ENAMEL

by Joseph N. Lacy ..... 20

## HOW STOVES AND RANGES ARE MADE IN THE PACIFIC NORTHWEST

by Howard E. Jackson ..... 25

## THE WHIRLPOOL PAINT STORY

32

## PRODUCTION ENAMELING ON SMALL ITEMS

by Walter Rudolph ..... 37

## FEATURES

FROM THE EDITOR'S MAIL ..... 12

THE FINISH LINE — An Editorial — STEEL SCRAP ..... 15

SNAPSHOTS OF MIDWEST ENAMELERS — finishphotos ..... 53

SUGGESTION BOXES ..... 60, 77

SAFE TRANSIT SECTION ..... 61

## INDUSTRIAL NEWS

INDUSTRY NEWS AND PERSONALS ..... 41

PRESSED METAL INSTITUTE SPRING TECHNICAL MEETING, MARCH 20-21 ..... 42

NATIONAL ELECTRIC SIGN ASSOCIATION MEETS IN CHICAGO ..... 50

MIDWEST ENAMELERS DISCUSS ONE-COAT APPLICATION ..... 53

## MISCELLANEOUS

MEETINGS ..... 6

NEW SUPPLIES AND EQUIPMENT ..... 58

NEW INDUSTRIAL LITERATURE ..... 59

CLASSIFIED ADVERTISING ..... 80

ADVERTISERS' INDEX ..... 80

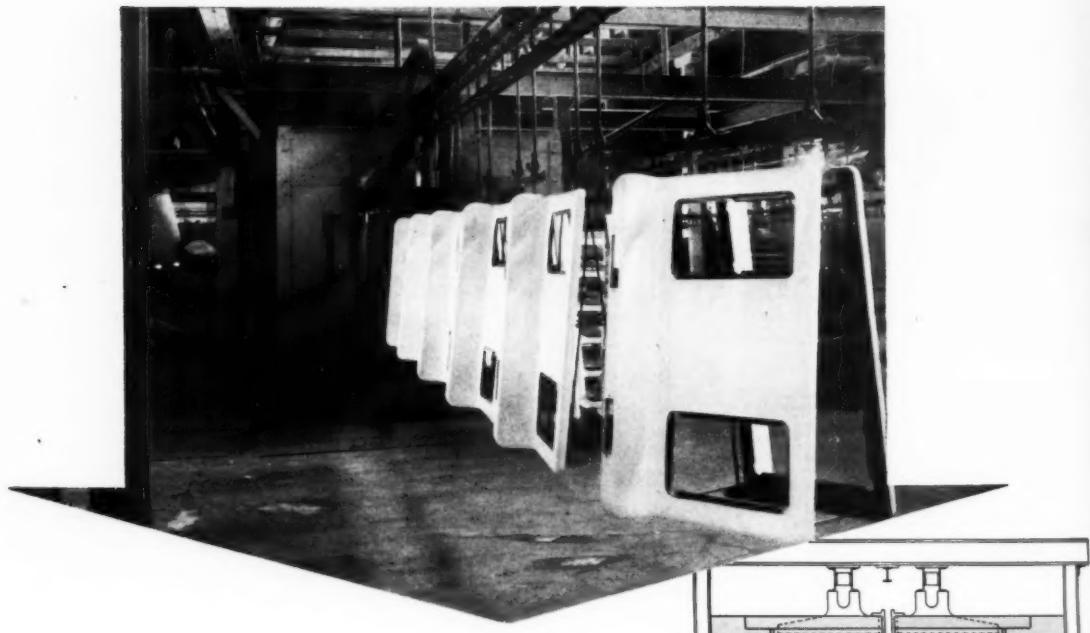
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FROM RAW METAL TO FINISHED PRODUCT

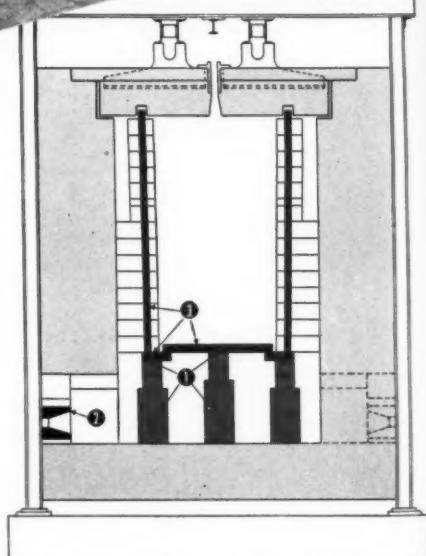
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	Page
RELATIONSHIPS BETWEEN COLOR, TYPE OF ALKALI IONS AND ADHERENCE OF GROUND COATS CONTAINING COBALT OXIDE by H. C. Marshall and R. M. King.....	20
MULLINS PLANT NO. 3 — photo story.....	22
HARD CHROME PLATE IN MAINTENANCE by Gilbert Close	25
CONSERVATION IN ENAMELING OPERATIONS by Evan Oliver.....	34
CONDENSATIONS OF PAPERS PRESENTED BEFORE CASE INSTITUTE INDUSTRIAL FINISHES SYMPOSIUM.....	43
A "PUSH-BUTTON" PLANT FOR AUTOMATIC FABRICATION	48

## FEATURES

THE FINISH LINE — An Editorial.....	13
SUGGESTION BOXES .....	17, 74
SAFE TRANSIT SECTION.....	75

## INDUSTRIAL NEWS

AMERICAN CERAMIC SOCIETY TO MEET IN PITTSBURGH.....	31
SYMPOSIUM ON RECENT ADVANCES IN INDUSTRIAL FINISHES.....	41
INDUSTRY NEWS AND PERSONALS.....	59
STEEL KITCHEN CABINET MFRS. ASSN. HOLDS QUARTERLY MEETING.....	94
CANADIAN CERAMIC SOCIETY HOLDS 50TH ANNUAL MEETING.....	95

## MISCELLANEOUS

MEETINGS .....	6
ADVERTISERS' INDEX .....	96
CLASSIFIED ADVERTISING .....	96

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	Page
THE BIG SQUEEZE IN AIRCRAFT FABRICATION	21
by Howard Engler	
COST REDUCTION OF STAMPINGS BY COST ANALYSIS	25
METHODS — Part I — by James M. Leake	
SYNTHETIC RESINS FOR INDUSTRIAL FINISHES — Part I	27
by William von Fischer	
MODERNIZING A 25-YEAR-OLD BUILDING	30
by Howard Michel	
THERE'S NO BUSINESS LIKE "KNOW" BUSINESS	38
by R. J. Miller	
HOW WHITE IS WHITE?	40 & 41

FEATURES

METAL PRODUCTS MANUFACTURING NEWS	13
CLEVELAND FILTRATION PLANT FEATURES	
PORCELAIN ENAMEL MURALS	45
SAFE TRANSIT SECTION	61

INDUSTRIAL NEWS

PRESSED METAL INSTITUTE TECHNICAL MEETING	33
EDISON ELECTRIC INSTITUTE SALES CONFERENCE	37
REFRIGERATION EQUIPMENT MANUFACTURERS MEET	39
TOOL ENGINEERS MEET IN CHICAGO	43
INDUSTRY NEWS AND PERSONALS	47
SAFE TRANSIT CERTIFICATIONS TOTAL 101	ST-17

MISCELLANEOUS

MEETINGS	6
NEW EQUIPMENT AND INDUSTRIAL LITERATURE	78 & 79
ADVERTISERS' INDEX	80

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Photo courtesy Farrington Manufacturing Company, Boston, Mass.

## Jewel box dies get extra life

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Shells for many higher-quality Farrington boxes are stamped from Republic Electro Paintlok and Electro Zincbond. These zinc-coated, chemically-treated steel sheets originally were developed to take and hold paints, lacquers, and synthetic enamels. They do that job well.

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	PAGE
TITANIUM TAKES THE TEST by W. S. Cockerell .....	19
COST REDUCTION OF STAMPINGS BY COST ANALYSIS METHODS — Part II — by James M. Leake .....	23
NEW PLANT BORN OF MARKET STUDY by Walter Rudolph .....	27
SYNTHETIC RESINS FOR INDUSTRIAL FINISHES Part II — by William von Fischer .....	31
HOT SPRAYING PROVES ECONOMICAL FOR AIRCRAFT FINISHING by Gilbert C. Close .....	35
THE USE OF PHOSPHORS IN VITREOUS ENAMELS by Harold P. Cahoon .....	39
HOW WHITE IS WHITE? .....	52

FEATURES

FROM THE EDITOR'S MAIL .....	10
PHOTO SALON .....	13
SAFE TRANSIT SECTION .....	81

INDUSTRIAL NEWS

AMERICAN CERAMIC SOCIETY ANNUAL MEETING .....	43
INDUSTRIAL FINISHING EXPOSITION IN CHICAGO .....	55
STOVE MEN TO CELEBRATE 20TH ANNIVERSARY .....	59
WEST COAST ENAMELERS HOLD PANEL DISCUSSION .....	66

MISCELLANEOUS

MEETINGS .....	6
NEW EQUIPMENT AND INDUSTRIAL LITERATURE .....	80
ADVERTISERS' INDEX .....	100

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	PAGE
IMPROVING PUNCH PRESS PRODUCTION—by Gilbert Close	17
TESTING FOR ENAMEL COATING DISCONTINUITIES by Stanley C. Orr.....	23
SYNTHETIC RESINS FOR INDUSTRIAL FINISHES PART III—by William von Fischer.....	29
WHAT 20,000 WOMEN WANT IN THEIR KITCHENS by Albert P. McNamee.....	35
WHAT YOU SHOULD KNOW ABOUT ASTM.....	60

## FEATURES

FROM THE EDITOR'S MAIL.....	8
THE FINISH LINE—AN EDITORIAL.....	11
SUGGESTION BOX.....	15
SAFE TRANSIT SECTION.....	71

## INDUSTRIAL NEWS

GAS APPLIANCE MANUFACTURERS	
17TH ANNUAL MEETING.....	39
STOVE MANUFACTURERS 20TH ANNIVERSARY MEETING	45
INDUSTRY NEWS AND PERSONALS.....	51

## MISCELLANEOUS

MEETINGS.....	12
ADVERTISERS' INDEX.....	92
CLASSIFIED ADVERTISING.....	92

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METAL PRODUCTS MANUFACTURING  
FROM RAW METAL TO FINISHED PRODUCT



## "...and they'll look like new for years to come!"

To keep home appliances new-looking longer, porcelain enamel finish is the answer. And among porcelain enamels, thin coat titania enamels—with no sacrifice of opacity—possess those properties which are most suitable for appliance use: greater shock, abrasion and chemical resistance.

TITANOX-TG, non-pigmentary titanium dioxide, is specially processed for all ceramic formulations. Through its controlled chemical and physical composition, TITANOX-TG assures unvarying color uniformity, speeds production and lowers cost. TITANOX-TG-400 is especially useful where characteristic delicate blue-white tints are desired.

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**TITANOX**  
*the brightest name in ceramics*

**TITANIUM PIGMENT  
CORPORATION**  
Subsidiary of NATIONAL LEAD COMPANY



JULY • 1952 finish

August • 1952

VOL. 9 • NO. 8

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MONTHLY TRADE PUBLICATION

Established January 1944

Published by

DANA CHASE PUBLICATIONS

360 North Michigan Avenue

Chicago 1

Telephone CENTRAL 6-1229

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*(on leave with the U.S. Army — Korea)*  
  
*Technical consultants* • PROF. A. I. ANDREWS  
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	PAGE
FABRICATING FRUIT AND VEGETABLE JUICERS	17
by Howard Jackson	.....
HOLLOWWARE PRODUCTION IN HOLLAND	21
by Peter Rollman	.....
A COMPACT FINISHING ROOM FOR SMALL PARTS	25
by Walter Rudolph	.....
THE EFFECTIVE UTILIZATION OF PAINT	29
by K. W. Strom	.....
THE IMPORTANCE OF DEMINERALIZED WATER IN	33
APPLIANCE-PRODUCING PLANTS	.....
ENAMELING OF ALUMINUM	35
by C. R. Sigler	.....
HOW WHITE IS WHITE?	42
WHAT THE METALS & ENAMELING INDUSTRIES SHOULD	44
KNOW ABOUT ASTM & COMMITTEE C-22	by M. Bozin

FEATURES

SUGGESTION BOX	11
THE FINISH LINE—AN EDITORIAL	13
FINISHFOTOS FROM INDUSTRIAL FINISHING SHOW	40
SAFE TRANSIT SECTION	63

INDUSTRIAL NEWS

ELECTROPLATERS HOLD 39TH ANNUAL MEETING	39
INDUSTRY NEWS AND PERSONALS	47
SUMMER HOMEFURNISHINGS MARKET	59

MISCELLANEOUS

MEETINGS	14
NEW SUPPLIES AND EQUIPMENT	60
NEW INDUSTRIAL LITERATURE	62
ADVERTISERS' INDEX	80

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 FROM RAW METAL TO FINISHED PRODUCT

JULY 1, 1952

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MICHIGAN STEEL CASTING COMPANY

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# September • 1952

VOL. 9 • NO. 9

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	PAGE
WATER CONTROL IS IMPORTANT IN ANODIZING	21
By J. D. O'Brien	21
EXPERIMENTS WITH WHITE ENAMEL DIRECTLY TO STEEL	23
by A. L. Friedberg	23
APPLIANCE PRODUCTION AT SPEED QUEEN — photo story	30
COMPREHENSIVE ABSTRACTS OF AES PAPERS	33
HOME LAUNDRY EQUIPMENT INDUSTRY — Special Section	37
PROGRESS IN THE HOME LAUNDRY INDUSTRY	39
REPORT OF INDUSTRY ACTIVITY by F. M. Mitchell	41
CURRENT PROBLEMS FOR APPLIANCE PRODUCERS by Roy Bradt	45
THE DISTRIBUTION PROBLEM by R. W. Armstrong	57
GUIDES FOR PURCHASER AND USER by Dr. Florence Ehrenkranz	59
OUTLOOK FOR HOME LAUNDRY INDUSTRY by Vergil Reed	60
HOW WHITE IS WHITE? — fifth in a series	70 & 71

## FEATURES

FROM THE EDITOR'S MAIL	10
THE FINISH LINE — A Guest Editorial	17
SUGGESTION BOX	19
SNAPSHOTS AT AHLMA SUMMER MEETING — finishfotos	46
PHOTOS OF WASHER-DRYER-IRONER GOLFERS	52 & 53
SAFE TRANSIT SECTION	85

## INDUSTRIAL NEWS

PROGRAM FOR PEI SHOP PRACTICE FORUM	28
INDUSTRY NEWS AND PERSONALS	73
GAS APPLIANCE MFRS. ASSN. NAMES NEW MEMBERS	75

## MISCELLANEOUS

INDUSTRY MEETINGS	6
NEW SUPPLIES, EQUIPMENT, AND LITERATURE	102
ADVERTISERS' INDEX	104

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went through  
the same Test  
in the same Mill . . .



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Times  
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October • 1952

VOL. 9 • NO. 10

PAGE

PRODUCING CONSTANT TOLERANCE DROP HAMMER	21
DIES by Gilbert C. Close.....	21
VERTICAL TWO-PASS OVEN SPEEDS VINYL PLASTIC	27
DRYING FOR APPLIANCE COMPONENTS.....	27
IMPORTANCE OF WATER CONTROL IN	29
PHOSPHATIZING by Euclid Faneuf.....	29
DESIGNING PROTECTIVE COATING COURSE AT	33
UNIVERSITY LEVEL by L. L. Carrick.....	33
CERAMIC COATINGS FOR CIVILIAN AND	38
DEFENSE PRODUCTS .....	38
PORCELAIN ENAMEL INSTITUTE FORUM.....	48
SOLVING SEAM WELDING PROBLEMS by J. J. Baker.....	50
LUMINESCENT PORCELAIN ENAMELS by D. C. Bowman.....	52
SPRAYING AND SPRAY EQUIPMENT by Roy D. Beck.....	53
NEW PICKLING COMPOUNDS by James B. Willis.....	54
STABLE COLORS IN TITANIA-OPACIFIED ENAMELS by H. S. Saunders...	56

## FEATURES

FROM THE EDITOR'S MAIL.....	6
FINISH SUGGESTION BOX .....	11
THE FINISH LINE—An Editorial .....	17
SAFE TRANSIT SECTION .....	77

## INDUSTRIAL NEWS

INDUSTRY NEWS AND PERSONALS .....	59
AGA-GAMA PLANNING FOR RECORD ATTENDANCE AT	
ANNUAL MEETING, OCTOBER 27-30 .....	64
STEEL KITCHEN CABINET ASSN. SHOWS PROGRESS.....	66
RESEARCH AND DEVELOPMENT THEME OF PAINT	
FEDERATION MEETING .....	68

## MISCELLANEOUS

INDUSTRIAL MEETINGS .....	8
NEW SUPPLIES, EQUIPMENT, LITERATURE .....	40
ADVERTISERS' INDEX .....	96

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We here at T-K are going to put a lot of promotion behind "Simplified Cooking" this next year and believe it will help sell a lot of ranges. We would like to tell you about this program. Why not drop us a line and suggest a date for such a meeting?

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VOL. 9 · NO. 11

PAGE

PROBLEMS AND EQUIPMENT IN SPOT WELDING	21
by J. R. Fullerton	
COLD FACTS ABOUT HOTPOINT by E. A. Murphy	25
IMPORTANCE OF WATER CONTROL IN ENAMELING	31
by Charles A. Fleming	
HIGH DENSITY GRINDING MEDIA by W. Clay	33
EIGHT WAYS TO GET THE MOST FROM HOT SPRAY	37
by H. G. Beck	
A TRADE ASSOCIATION CAN SERVE A MULTI-SIDED INDUSTRY by Joseph F. Battley	39
HOW WHITE IS WHITE? — sixth in a series	48
DESIGNING A PROTECTIVE COATING COURSE AT UNIVERSITY LEVEL — Part II — by L. L. Carrick	51

FEATURES

FROM THE EDITOR'S MAIL	8
THE FINISH SPOTLIGHT	17
FINISH SUGGESTION BOXES	19, 80
PHOTOS FROM PEI FORUM — finishfotos	72
SAFE TRANSIT SECTION	81

INDUSTRIAL NEWS

STAMPERS HOLD ANNUAL MEETING	45
SURVEY REFLECTS STRONG INTEREST IN ASTM CERAMIC COATING SYMPOSIUM	56
PORCELAIN ENAMEL PANELS LINE ELIZABETH RIVER TUNNEL CEILING by W. E. McFee	59
INDUSTRY NEWS AND PERSONALS	61
JOBBER PLANT IN OPERATION FIVE WEEKS AFTER FIRE by J. W. Vicary	64

MISCELLANEOUS

INDUSTRIAL MEETINGS	6
NEW SUPPLIES, EQUIPMENT, LITERATURE	42
CLASSIFIED ADVERTISING	96
ADVERTISERS' INDEX	96

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*High Acceptability for...*

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Gurney Products, Inc., Toronto, Canada—Says:  
"The Gurney Deluxe Gas Ranges with the Perma-View  
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Perma-View lends salable beauty to your product. All that meets the eye is crystal clear tempered glass and gleaming chrome trim—no unsightly sealing strips are visible—yet—Perma-View is perfectly sealed so that the crystal clear visibility is retained—*Year after Year*.

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## **PRODUCTS, INCORPORATED**

(formerly Mills Engineering Co.)

**1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN**

# December • 1952

VOL. 9 • NO. 12

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	Page
<b>PROPERTIES OF STEEL FOR ENAMELING — Part I</b>	21
by M. B. Gibbs and F. R. Porter	

<b>FABRICATING AND PAINTING STEEL PARTITIONS</b>	25
by Walter Rudolph	

<b>WATER CONTROL PLAYS IMPORTANT ROLE IN FINISHING      OF ALUMINUM</b> by Kenneth E. Walden	31

<b>SAFE TRANSIT SECTION</b>	75

**FEATURES**

<b>FINISH SUGGESTION BOX</b>	11

<b>THE FINISH SPOTLIGHT</b>	15

<b>FROM THE EDITOR'S MAIL</b>	16

**INDUSTRIAL NEWS**

<b>NATIONAL HOME LAUNDRY CONFERENCE</b>	39

<b>PORCELAIN ENAMEL INSTITUTE ANNUAL MEETING</b>	41

<b>GAS APPLIANCE SHOW HELD IN ATLANTIC CITY</b>	45

<b>INDUSTRY NEWS AND PERSONALS</b>	51

<b>STOVE MEN TO MEET IN CINCINNATI, DECEMBER 1-2</b>	52

<b>STEEL KITCHEN CABINET ASSN. PLANS ANNUAL MEETING</b>	55

**MISCELLANEOUS**

<b>INDUSTRY MEETINGS</b>	12

<b>NEW SUPPLIES, EQUIPMENT, LITERATURE</b>	34

<b>CLASSIFIED ADVERTISING</b>	92

<b>ADVERTISERS' INDEX</b>	92

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 FROM RAW METAL TO FINISHED PRODUCT**

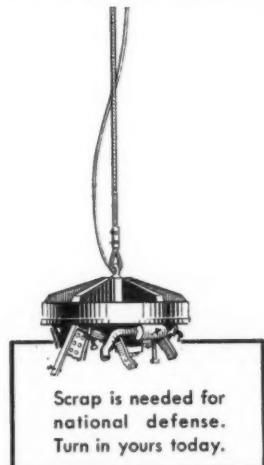


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In supplying **FIRST QUALITY** Steel Stampings, sub-assemblies, or the finishing of any sheet metal parts necessary to keep your production lines running smoothly —New Monarch is fully prepared to do its share in the present emergency.

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**LOOK to New Monarch for all your stamping needs.**  
Send blueprints for estimates.

**When in need of Stampings  
See...**



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406 S.W. NINTH STREET  
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GO AHEAD, SON . . . you'll learn!

ADS OUT



**Let PEMCO solve your  
technical problems**

Next to the quality of its materials, Pemco prides itself on the continuing service it performs for the porcelain enameling industry. If you have a technical problem, we invite you to discuss it with our laboratory technicians and engineers. Wire, phone or write today! There's no obligation, of course.



Yes, young man, you'll learn that shaving won't always be fun when you grow up. You might learn too why dad doesn't get sore when you drop something on the wash bowl. He knows it's porcelain enamel, the finish that is permanently beautiful, that cannot fade or discolor, that doesn't wear, mar or scratch. But even dad might not know about Pemco. You see, Pemco makes the frit that makes just about the best porcelain enamel there is. Most of the best manufacturers of porcelain enameled products know this. They learned from experience, just as Pemco itself—through 41 years of pioneering, research and development—learned. With Pemco, you can be sure!

*"After All, It's the Finish that Counts"*

**PEMCO**  
CORPORATION

*"Always Begin with a Good Finish"*



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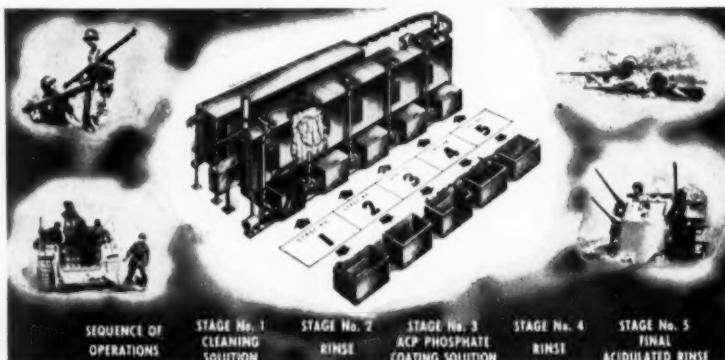
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ENAMEL COLORS • GLAZE STAINS • GLASS COLORS AND RELATED CERAMIC MATERIALS

# AMERICAN CHEMICAL PAINT COMPANY

AMBLER **ACP** PENNA.



## Technical Service Data Sheet Subject: METAL PRESERVATION AND PAINT PROTECTION WITH ACP PHOSPHATE COATING CHEMICALS



U.S. ARMY PHOTOGRAPHS COURTESY OF "ORDNANCE MAGAZINE"

Typical spray and dip phosphating equipment and some ordnance products that are now given a protective phosphate coating for extra durability under all kinds of severe exposure conditions. Both military and civilian applications of ACP phosphate coating chemicals are shown in the chart below.

SELECTION CHART OF ACP PROTECTIVE COATING CHEMICALS FOR STEEL, ZINC, AND ALUMINUM

METAL	ACP CHEMICAL	OBJECT OF COATING	TYPICAL METAL PRODUCTS TREATED	GOVERNMENT SPECIFICATIONS
STEEL	"GRANODINE" Zinc Phosphate Coating Chemical	Improved paint adhesion	Steel, iron, or zinc fabricated units or components, automobile bodies, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, rifles, small arms, belt links, cartridge tanks, vehicular sheet metal, tank bolts and links, recoilless guns, etc.	MIL-S-5002 JAN-C-490, Grade I JAN-F-495 U.S.A. 57-0-2, Type II, Class C U.S.A. 51-70-1, Finish 22.02, Class C U.S.A. 50-60-1 16 E4 (Ships)
	"PERMADINE" Zinc Phosphate Coating Chemical	Rust and corrosion prevention	Nuts, bolts, screws, hardware items, tools, guns, cartridge clips, fire control instruments, metallic belt links, steel aircraft parts, certain steel projectiles and many other components.	MIL-C-16232 U.S.A. 57-0-2, Type II, Class B U.S.A. 51-70-1, Finish 22.02, Class B Navy Aeropautical M-364 U.S.A. 72-53 (See AN-F-20)
	"THERMOL" "GRANODINE" Manganese-iron Phosphate Coating	Wear-resistance anti-galling, safe break-in of friction rubbing parts. Rust proofing.	Friction surfaces such as pistons, piston rings, gears, cylinder liners, camshifts, keeper cranks, rocker arms, etc. Solid armor, weapon components, hardware items, etc.	MIL-C-16232 U.S.A. 57-0-2, Type II, Class A U.S.A. 51-70-1, Finish 22.02 Class A Navy Aeropautical M-364 U.S.A. 72-53 (See AN-F-20)
	"GRANODINE" Zinc-iron Phosphate Coating	Improved drawing, extrusion, and cold forming	Blanks and shells for cold forming, heavy stampings; tubes, tubing for forming or drawing; wire, rod, etc.	—
ALUMINUM	"ALODINE" Protective Coating	Improved paint adhesion and corrosion resistance	Aluminum products of similar design such as refrigerator parts, wall tile, signs, washing machine parts, tubes, etc., aircraft and aircraft parts, buzzkicks (rocket launchers), helmets, belt buckles, clothes dryers, clothesline, rocket motors, etc., aluminum strip or sheet stock.	MIL-C-5541 (See also QPL-5541-I) MIL-S-5002 AN-F-20 U.S. Navord 05. 675 16 E4 (Ships) AN-C-170 (See MIL-C-5541) U.S.A. 72-53 (See AN-F-20)
ZINC	"LITHOFORM" Zinc Phosphate Coating Chemical	Improved paint adhesion	Zinc alloy die castings; zinc or cadmium plated sheet or components; hot dip galvanized stock, galvanite, signs, sailing, roofing, galvanized truck bodies, etc.	QO-P-416 RN-C-82 JAN-F-495 AN-F-20 U.S.N. Appendix G U.S.A. 72-53 (See AN-F-20)

WRITE FOR DESCRIPTIVE FOLDERS ON THE  
ABOVE CHEMICALS AND FOR INFORMATION ON  
YOUR OWN METAL PROTECTION PROBLEMS



## MEETINGS

### AHLMA ANNUAL MEETING

American Home Laundry Manufacturers Association, annual meeting, Morrison Hotel, Chicago, January 5.

### HOMEFURNISHINGS MARKET

Winter Homefurnishings Market, The Merchandise Mart and the American Furniture Mart, Chicago, January 7-13.

### PLANT MAINTENANCE SHOW

Plant Maintenance Conference and Show, Convention Hall, Philadelphia, January 14-17.

### HOUSEWARES, APPLIANCE SHOW

National Housewares and Home Appliance Exhibit, Navy Pier, Chicago, January 17-23.

### HOME BUILDERS SHOW

National Association of Home Builders, annual convention and exhibition, Hilton and Congress Hotels, Chicago, January 20-24.

### EASTERN ENAMELERS CLUB

Eastern Enameler Club, Sylvania Hotel, Philadelphia, January 26.

### WORLD TRADE FAIR

International Trade Fair, Navy Pier, Chicago, March 22 through April 6.

### NATIONAL PACKAGING EXPOSITION

American Management Association, national packaging exposition and conference, Atlantic City Auditorium, April 1-4.

### AMERICAN CERAMIC SOCIETY

The American Ceramic Society, annual meeting, William Penn Hotel, Pittsburgh, April 27-May 1.

### ASTM 50TH ANNIVERSARY

American Society for Testing Materials, fiftieth annual meeting, Statler and New Yorker Hotels, New York City, June 23-27.



## finish SUGGESTION BOX

### New equipment forms crown, corners and sides of metal cabinet in single cycle of operations

machine features open throat and automatic positioning for high production rate

**A** NEW tangent bender has been engineered to shape flanged sheets around fixed radiused corners without wrinkling, and to facilitate rapid, accurate forming of metal cabinets, cases, housings, liners and shrouds having two or four radiused corners. Open throat design permits fully-formed shapes to be removed from the machine easily and quickly.

#### Automatically positions metal to be formed

The equipment features automatic positioning of the metal to be formed. Ram latches with bed the last inch of travel and exerts up to 17 tons ver-

tical pressure. Hand finishing is said to be virtually eliminated.

#### Operation details

In operation, the metal to be formed is positioned on the bed of the machine which contains the female die. The overhead arm or ram, holding the male die, moves down upon the material and clamps it into position. The wing swings out and upward to effect positive shaping. At the same time it forms the desired shape, the equipment can accomplish slitting, piercing, stamping or cutting operations within its 17-ton capacity. It can be varied to accommodate ra-

dius corners from  $\frac{5}{8}$  to 5 inches by changing the rack and gear mechanism and the male die. All common styles of flanges as well as standard cabinet sizes can be handled by a single machine.

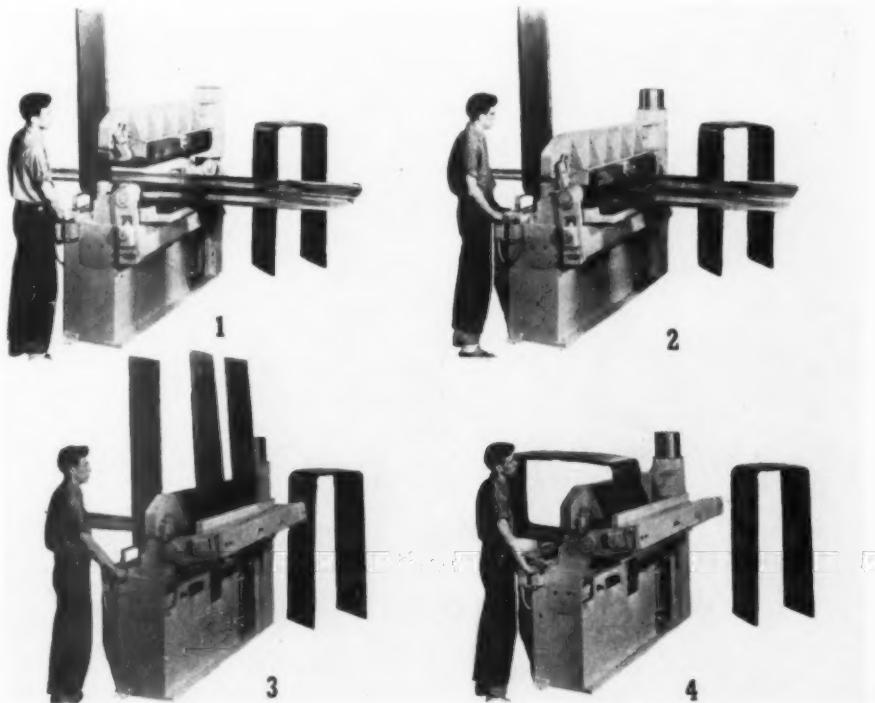
#### Available in types with die space of 48, 36 or 24"

The new tangent bender is available in three types having die space of 48, 36 or 24 inches. It can be equipped for air or hydraulic operation, and with controls for completely automatic cycling, or with separate ram and wing controls for manual operation. Air-operated machine utilizes standard 70 pounds per square inch line pressure and requires 2 cubic feet of air per cycle.

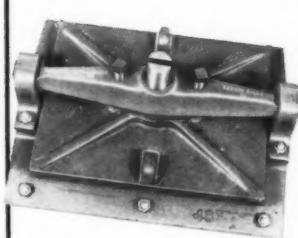
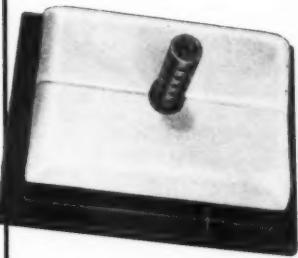
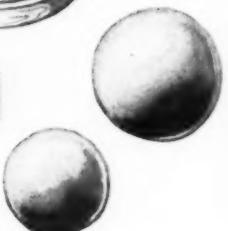
When the unit is equipped with automatic sequence control, the complete cycle is performed in  $4\frac{1}{2}$  seconds. With manual control, the cycle requires  $7\frac{1}{2}$  seconds. It is designed to produce two-corner cabinets at the rate of 70 per hour with the automatic controls and 60 per hour with manual operation, using one operator.

**Engineering catalog and complete information will be sent upon receipt of letterhead request to finish.**

Illustrations show the various steps in forming operations with this new equipment designed to shape flanged sheets around fixed radiused corners with wrinkling.



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# The effect of mill tolerances on the finished sheet metal stamping

how careful planning can hold inaccuracies to a minimum—the relation  
between tolerances and practical die design and tooling cost

by *Stanley R. Cope* • PRESIDENT, ACME SCHOOL OF DIE DESIGN ENGINEERING, SOUTH BEND, IND.

WHEN a stamping is being designed, and particularly when it is being dimensioned, the designer must take into careful consideration the variation in the thickness of the metal which is specified. The normal tolerances in the manufacture of strip and sheet metal are capable of contributing to the dimensional inaccuracies of stampings more than any other factor. The effects these tolerances have on the finished product can seldom be entirely eliminated, but, by careful planning from the time the stamping is conceived until it is in production, inaccuracies can be held to a minimum.

The designer needs to know where to apply the dimensions and he must also be cognizant of the fact that the tolerance which he allows on each dimension has a direct bearing on the cost of the tools which are required to produce the part. With few exceptions, the original cost of a set of tools rises sharply as close dimensions are called for. In addition to this, maintenance costs are higher and much closer control is

necessary in the pressroom to maintain the required accuracy.

#### Study accuracy requirements

In many cases, close tolerances may be a requirement of stampings for proper assembly of component parts or for the proper functioning of the finished product. There are also many instances where the accuracy of dimensions specified on drawings is neither necessary nor desirable from a practical viewpoint.

Here is where the process engineer should play a part by carefully studying each drawing in the light of the assembly or operating requirements of the stamping. His recommendations may reduce both production troubles and production costs.

Following the receipt of a drawing for a new part, the process engineer should outline the operations that will be required to complete the stamping, including any corrective operations necessary to produce a part of the required accuracy.

Die makers frequently find it necessary to add one or more corrective

operations *after* dies have been built, before the stamping is accepted by the inspection department.

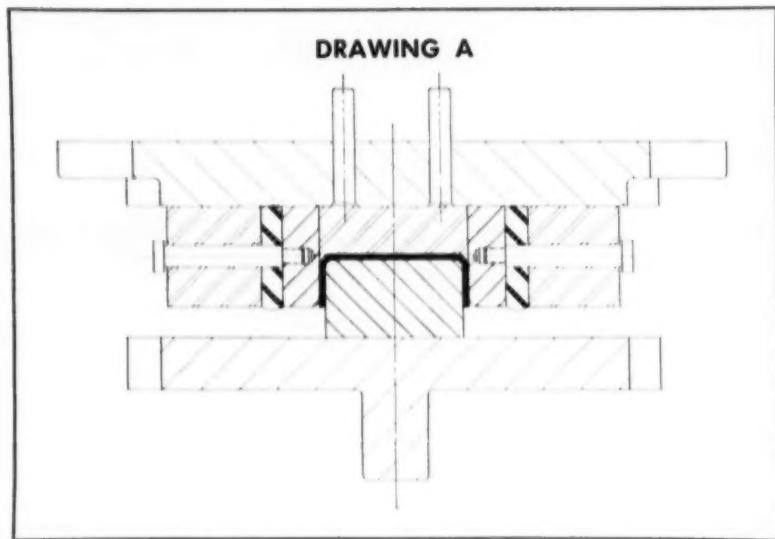
This is often the direct result of the process engineer having concerned himself chiefly with the general shape and size specified and not having given sufficient study of accuracy requirements. Consequently corrective operations—flattening, re-striking, sizing, shaving—are often overlooked.

Then, if one or two of these operations (which did not originally appear) are added it may mean that an otherwise profitable job becomes an unprofitable one—for—the process sheet is the basis for quotations. Additional dies cost money, but, more important, there usually is not enough time left to build them. As a result, deliveries cannot be made when due, which may be of much greater con-

**Stanley R. Cope** was formerly chief die engineer, Bendix Aviation Corporation and its subsidiaries. Shortly after the outbreak of World War II, he was sent on a lecture tour through the Southwest to acquaint the engineering staffs of numerous Government plants in the current method of deep drawing stainless steel and magnesium. On July 1, 1941, he left for South America where he made a survey of South American industries and vocational training schools. While there he compiled data on production practices, machine assembly, studied workmanship and types of materials.

Mr. Cope is a member and director of Pressed Metal Institute, and is now actively engaged with the PMI Educational Committee. Member and past chapter chairman, 1942-43 ASTE Chapter No. 30, South Bend, Indiana. He has lectured before many of the PMI Districts, and also has given 21 of his professional talks before the various chapters of the American Society of Tool Engineers. He is editor of 4 volumes in Die Design Engineering and of 4 volumes in Tool Design Engineering.





cern than the actual loss in money. Although corrective operations can sometimes be avoided by last-minute "concessions" from the engineering department, this is not often the case.

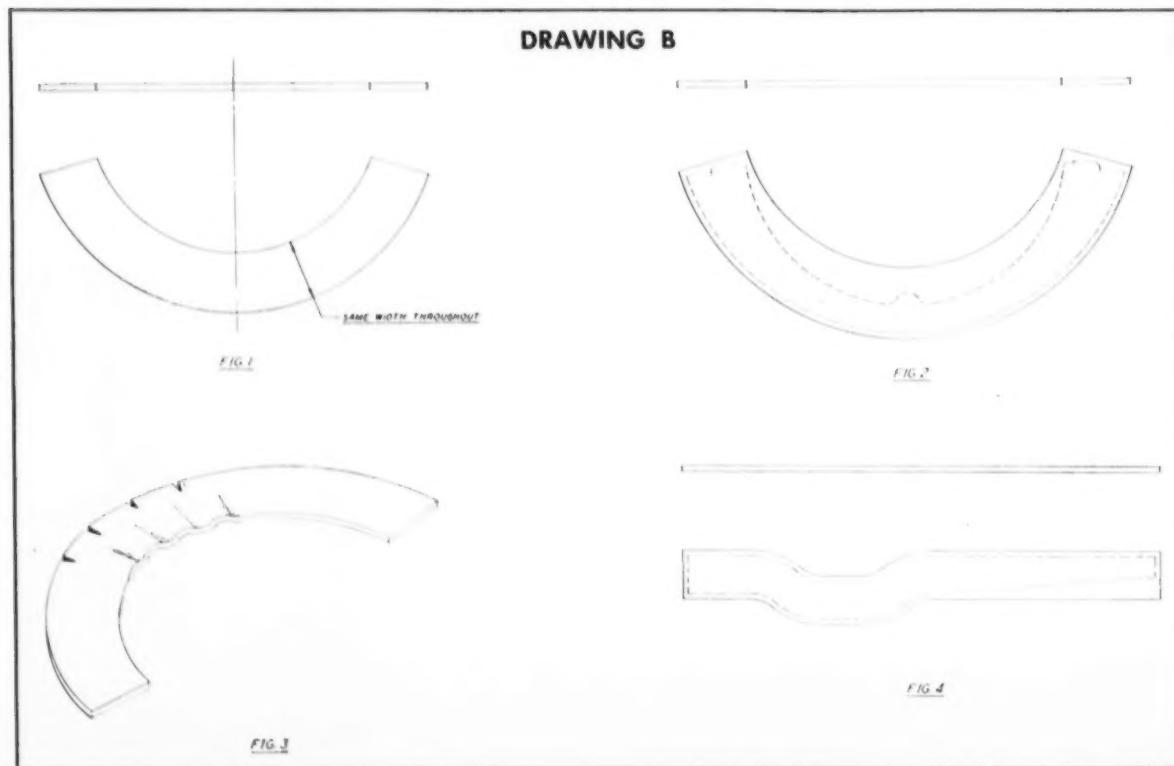
#### Avoiding corrective operations

To avoid as many corrective operations as is possible, the process engineer should study the accuracy required of each dimension, giving particular attention to any dimensions

which cannot be held because of the variation in the thickness of the metal. Part drawings are often dimensioned in a heterogeneous fashion, with dimensions given both inside and outside the metal. When this is the case, the process engineer should request the product designer to re-dimension the stamping. If he finds any corrective operations are necessary because of metal variation or any other reason, he should con-

sult with the product designer to make certain that the work these "extra" dies do is necessary for the stamping to function properly. Changes that are requested on a part drawing should always be accompanied by feasible reasons for making them. Although some are granted to make the stamping easier to make, with little or no saving in cost, the fullest cooperation from the product designer can always be expected if actual savings can be cited, either in the cost of the tools or in production, or both.

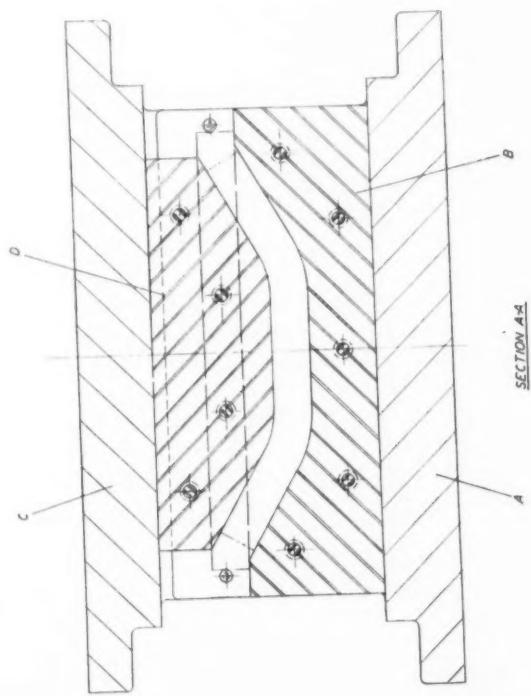
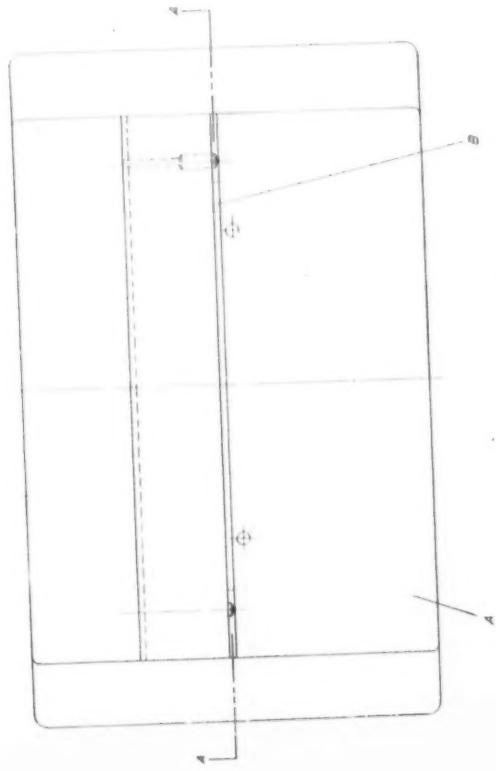
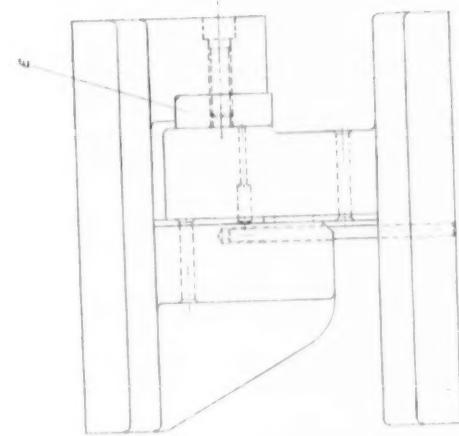
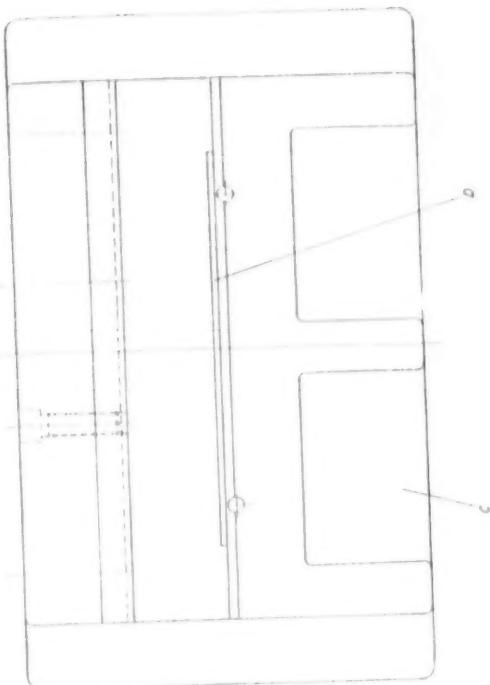
The spring-back of ears, lugs, embossments, and other portions of certain stampings is often difficult to control, largely because of the metal thickness variation. If the process engineer does not work closely with the die designer so that the latter chooses the proper type of die, and incorporates in its design whatever features are necessary to control the spring-back, corrective operations may have to be added. Most die designers are familiar with ordinary bending and forming dies, but few seem to be acquainted with the many special dies and devices which are in use to overcome the difficulties



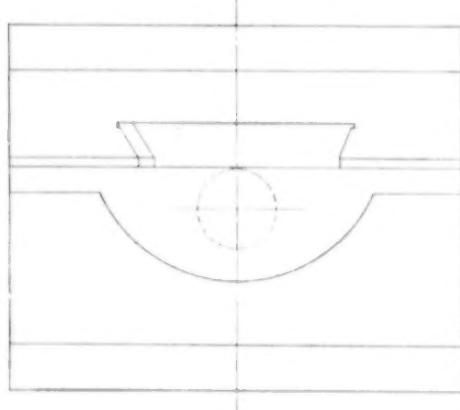
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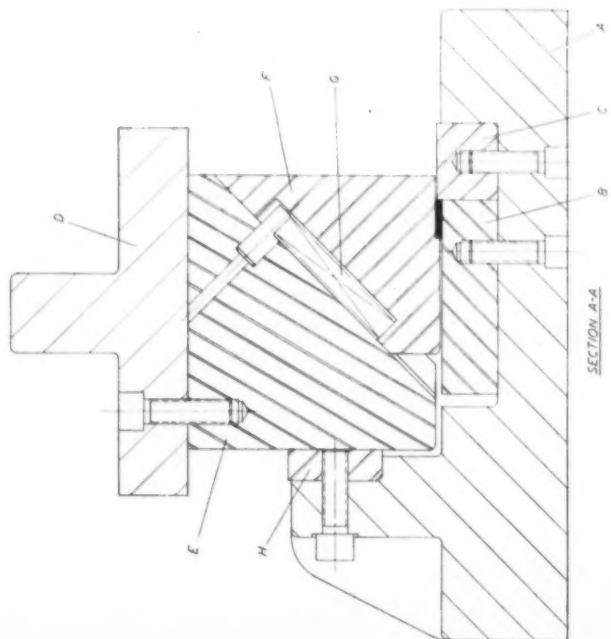
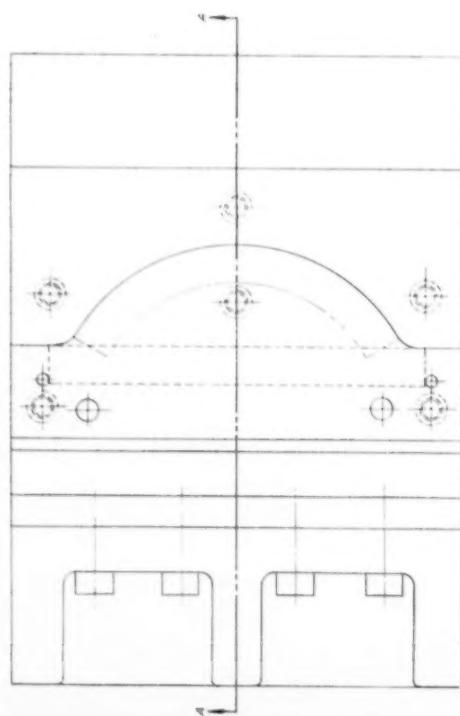
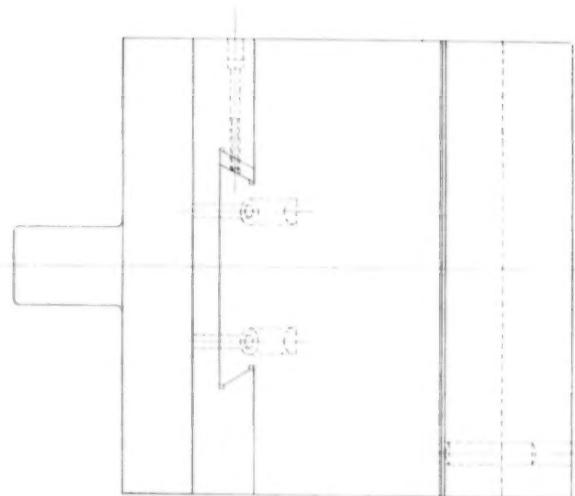
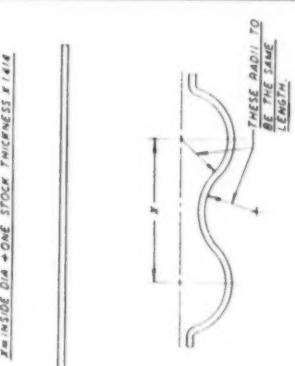
**DRAWING C**



DRAWING D



DRAWING E



which may arise from the natural tendency of the metal to spring back to its original position after forming.

#### Double dies vs. single dies for close dimension work

A common mistake which is often made by process engineers is to specify a double die, instead of two single dies, to bend or form two blanks (usually left and right hand) which have to be held to accurate dimensions. If this is done, approximately half of the stampings produced will not be to size because of the difference in the thickness between the two blanks which are formed simultaneously. When two blanks, which are not the same thickness, are placed in a die, the thicker blank in one station of the die prevents the forming blocks in the adjoining station from contacting the entire surface of the thinner blank. The inaccuracies in the finished stamping are greater with thick stock because the permissible variation in metal sheet increases in proportion to its thickness. For instance, No. 7 ga. (0.1793 in.) sheet steel may vary as much as 0.014 in. in thickness. If it were attempted to form in the same die two blanks which were not the same thickness (it would be rare for the operator to choose two blanks of the same thickness), the thicker blank would be struck over its entire area at the bottom of the press-stroke, whereas the thinner blank would only be partially formed and not finally struck to set the metal.

There are many ways to get around metal variation and spring-back troubles without adding corrective dies or costly hand operations.

#### Practical methods of overcoming variations in metal thickness

The accompanying drawings have been selected to show how plain, edgewise, and circular bends can be made accurately, even though the metal varies considerably in thickness.

A novel and effective method, which may be used to compensate for variations in the thickness between blanks, is shown in **Drawing A**. The space between the punch and die is

made to the low limit of the stock thickness, and a piece of rubber is placed back of each bending block to compensate for thicker blanks. By this arrangement the right amount of space for each blank is allowed regardless of its thickness.

Material saving can often be effected by bending crescent and similarly shaped blanks from straight strips in an edgewise bending die, instead of producing their contours by blanking (**Drawing B**). Depending upon the blank, it may be bent directly to shape, as shown in Figure 1; or to an approximate shape first, and later trimmed, as shown in Figure 2. When a strip of metal is bent edgewise, the outer portion of the blank is stretched while the inner portion is compressed. There is a tendency to pull the metal apart on the outer rim. This causes the stock to thin out considerably and often split. Since there is an excess of metal in the inner portion of the blank, the metal tends to thicken and wrinkle as shown in Figure 3. Strips with mill edges should be used to avoid splitting if the blank is to be edge-bent through a considerable distance. Blanks with sheared edges can only be bent through a limited distance.

Two types of dies are used to produce stampings by edge-bending. These are shown in **Drawings C** and **D**. The choice between these dies depends upon the uniformity of the metal thickness and the flatness of the stamping.

If the work has to be produced only to commercial accuracy and flatness is not a prime requisite, the type of die shown in **Drawing C** should be used. This die consists of a special cast-iron die holder shown at A, female die B, cast-iron punch holder C, male punch D, and wear plate E. The punch and die blades are made thin to permit the casting to slide down over the blank before the forming starts to prevent the metal from excessive thickening and wrinkling. A heel block and a wear plate are necessary to prevent the metal from pushing the punch holder forward. The blades should be 0.002 or 0.003 in. thicker than the thickest material that will be placed in the die.

A die that compensates for the variation in thickness between sheets, and also edge-bends blanks with a uniform thickness, is shown in **Drawing D**. Dies of this type are used to bend side members for automobile frames and web members for automobile brakes (Figures 2 and 4, **Drawing B**). The die consists of a specially designed die holder shown at A, die members B and C, punch holder D, punch members E and F, spring G, and wear plate H. Screws, dowel pins, and gages are not shown. The operation of the die is as follows: The blank is placed in the die in the position indicated by dotted lines. When the slide descends, punch member F contacts the blank and squeezes it tightly against die member B. Continued descent of the slide forces punch member F sidewise. Punch member F holds the blank firmly against the die while the step machined at the back of the punch bends the strip. When the slide ascends, spring G returns punch member F to its normal position.

It is necessary to study this die carefully to understand the advantage it has over the die shown in **Drawing C**. The thickness between sheets varies considerably according to the gage of the sheets. For example, No. 3 gage (0.164 in.) sheets, 12 in. wide, vary as much as 0.007 in., plus or minus. Therefore, sheets may be as thin as 0.157 in., or as thick as 0.171 in. If all of the sheets were rolled to the high limit, no thickening or wrinkling would occur. But when thinner blanks are placed in the die, say 0.157 in., a considerable space is left, which allows the blank to thicken and wrinkle. On the other hand, if the type of die shown in **Drawing D** is used to bend the same material, each blank is confined in a space equal to its thickness because the punch cannot move sidewise until it bears against the blank, regardless of the blank's thickness. When the punch has contacted the blank, it cannot be forced upward by the pressure exerted against it when the metal attempts to thicken.

Sheet metal clamps and similarly shaped stampings are made in three  
to Page 82 →

# The steel supply picture for 1952

by *R. F. Sentner* •

ASSISTANT EXECUTIVE VICE PRESIDENT, UNITED STATES STEEL COMPANY,  
PITTSBURGH, PENNSYLVANIA

**T**HREE will be more steel available in 1952 than in the record year of 1951, in which the American steel industry produced approximately 105 million ingot tons. This tonnage will be 9% higher than in 1950, the previous peak year, and will be 17% above 1944, the peak year of World War II.

Throughout this past year, it has been commonly accepted that there was a shortage of steel. Whether this is factual depends entirely on the definition of the word shortage. With the direct military procurement in 1951 being not more than 10%, increased production alone, in effect, provided the military needs, leaving a full measure of steel for all other requirements. In 1952, the direct military requirements may require as much as 15% of the national production, but this increased requirement again will be largely offset by increased availability, again leaving a full measure of steel for all other requirements.

It is the factor of timing that develops the circumstances which result in honest conclusions that there is a shortage of steel. When, for purposes of national defense, timetables of production are established in terms of units per month or per quarter, without regard to feasibility of procurement of steel in such a particular period of time, apparent rather than real shortages result. When too many things are required to be done in too short a time, there is temporary shortage, and I believe that is true no matter what the productive capacity of the steel industry may be or ever will be. A more reasonable timing of needs would change this picture of apparent shortages. Whether such changes in timetables would have impaired our over-all defense effort, I am not qualified to say.

The current weekly production of steel is at the annual rate of almost 103 million ingot tons. With new facilities coming in during 1952, I believe the industry will have capacity for the production of more than 110 million ingot tons.

## The crucial scrap picture

There are factors, however, that may limit the extent to which the industry can better its 1951 production performance. The first is lack of scrap. For nearly a year now, the industry has been using every pound of scrap it could lay its hands on, and has been depleting inventories of scrap at the mills. The success of current scrap drives is, therefore, a crucial consideration. I predict that they will be moderately, though not spectacularly, successful. It is extremely difficult to step up the level of scrap accumulation because the dormant scrap which we are now collecting must come largely from the wearing out and obsolescence of machinery, equipment, and other items produced during the early 1930s or prior periods, an era during which such production was at an extremely low ebb. *Much depends upon our success in obtaining the sizable stocks of scrap which the government owns in the form of obsolete ships, weapons and other equipment.*

## Alloy materials picture

A second factor which may limit production is a shortage of alloying materials such as nickel, chromium, manganese, and other ferro-alloys. Many of these materials are likely to continue in short supply, and may be expected to limit the production of the particular end products for which they are required. With the exception of manganese, however, limitations in their supply do not affect

seriously over-all steel production. Manganese will be a serious problem in 1952, but *I am not inclined to believe that it will be a limiting factor in steel production.* Nevertheless, we shall have to economize in its use; and we shall certainly not be able to add to strategic stockpiles all the manganese which the military authorities would desire.

## The factor of work stoppages

A third factor is continuity of operations. Work stoppages and slowdowns are never contemplated in any forecasts. Any losses in production from these causes are irretrievably lost.

The final major factor which may limit steel production in 1952 is steel demand, which is the other side of our equation. If, next year, this factor comes into play in any significant amount, the immediate problem may well disappear. *The demand for many steel mill products may be less than the supply, and discussion of expanding steel production then becomes academic.*

This is one of the areas in which the greatest disagreement exists between those in Washington and many members of the business community. You hear that requirements for structural steel at present are in excess of 200% of supply. You hear that overall requirements for the first quarter are 65% in excess of available production. These figures are said to be the "screened requirements" of the various Claimant Agencies derived from the stated needs of individual steel consumers. I say to you that such figures as these are totally meaningless as measures of the degree of imbalance between demand and supply. If demand for any product exceeds supply by 1%, immediately all requirements begin to expand like *to Page 83* →

# Solubility of refractory mill additions in fired ground coat enamels

by James H. Healy • A. O. SMITH CORPORATION, MILWAUKEE, WISCONSIN

## ABSTRACT

The solubility of refractory mill additions—clay, Keystone feldspar, and nepheline syenite—in typical commercial ground coat frits was

studied with the Geiger-counter X-ray spectrometer. Crystalline alpha quartz and feldspars were present in normally fired ground coats. The X-ray analysis showed that the relative

quantities of crystalline phases present decreased with an increase in firing temperature and were not appreciably affected with an increase in firing time.

THE rate of solubility of refractory mill additions in fired sheet steel ground coat enamels has never been reported. Besides, no satisfactory technique has been formulated for such a study. The investigation of the solubility of clay, Keystone feldspar, and nepheline syenite in fired ground coat enamels was made by using the North American Phillips X-ray unit, which affords a rapid method of detecting crystalline phases. The effects of firing time and firing temperatures on the solubility of these mill additions in various frits were considered.

## Review of literature

Previous investigators have reported that clay, feldspar, nepheline syenite, and quartz have been added to increase the firing range, reduce burn off, improve scratch resistance, and reduce fish-scaling in ground coat enamels<sup>1</sup>.

Studies of crystalline phases in enamel by means of X-rays were made by Schwartzwalder and King<sup>2</sup> using fragments of enamel at metal-enamel interface. They removed most of the glass physically, and then of the remaining crystals took X-ray diffraction patterns in which alpha iron and additional unknown lines were found. Noble<sup>3</sup> filtered an X-

ray beam through lead slits and glazed the surface of the enamel in order to study the action of mill

additions in ground coat enamels. Only alpha iron lines plus unknown lines were obtained on the photo-

Table I  
Crystalline Phases Present with Respective Weight Intensities of Refractory Mill Additions in Fired Ground Coat Enamels

Enamel	Crystalline Phases Present	d Value	Weight Intensities		
			1550°F	1600°F	1650°F
A1, Plain frit	none	..	..	..	..
A2, 6% Clay A	Alpha Quartz	3.35	19	5	4
A3, 6% Clay B	none	..	..	..	..
A4, 3% Keystone feldspar	Alpha Quartz	3.35	11	8	7
	Feldspar	3.18	36	18	12
		3.24	26	17	9
A5, 6% Keystone feldspar	Alpha Quartz	3.35	11	8	0
	Feldspar	3.18	53	45	19
		3.24	68	45	16
A6, 6% Nepheline syenite	Potash	3.18	88	74	33
	Feldspar				
			1200°F	1250°F	1300°F
B1, Plain frit	none	..	..	..	..
B2, 6% Keystone feldspar	Alpha Quartz	3.35	8	8	5
	Feldspar	3.18	33	26	18
		3.24	57	52	29
					7

Table II  
Effect of Firing Time on the Solubility of Keystone Feldspar As a Mill Addition in Fired Ground Coat Enamels

Enamel	Crystalline Phases Present	d Value	4	6	8	10	12
			Min.	Min.	Min.	Min.	Min.
A5, 6% Keystone feldspar	Alpha Quartz	3.35	11	17	10	13	14
	Feldspar	3.18	50	66	60	50	50
B2, 6% Keystone feldspar	Alpha Quartz	3.35	8	6	5	5	6
	Feldspar	3.18	33	18	23	22	10
		3.24	57	58	61	61	47

graphic film, when 7% clay, 1/2% bentonite, 3/4% borax, 3% feldspar, and 3% silica were systematically added as mill additions. On the other hand, Friedberg and Petersen<sup>1</sup> in a recent investigation, using the North American Phillips X-ray unit, found crystalline alpha quartz in titanium cover coat enamels when clay was added as a mill addition, but no quartz was detected when clay was omitted. They concluded alpha quartz came from the free quartz in the clay and did not dissolve. A further analysis of their work indicated that as the silica content in the frit was decreased, the fluidity of the frit increased, and more quartz was dissolved.

#### Experimental work and results

In this study three typical commercial ground coat frits were used.

With mill additions of 3/4% borax and 6% clay, equal mixtures of two of the frits matured at 1550° F. This blend formed the frit component in the series A enamels. With

standards. The enamels were applied by dipping onto 20-gage enameling iron, which had been pickled but had not been given a nickel flash. The wet weight of the milled enamel on the iron was adjusted to give a fired enamel thickness of three to four thousandths of an inch.

The effect of firing temperature on solubility was made by firing enamels of series A at 1550° F., 1600° F., and 1650° F. for four minutes. Enamels of series B were fired from 1200° F. to 1350° F. at 50-degree intervals for four minutes. The importance of firing time was obtained by firing enamel A5 at 1550° F. and enamel B2 at 1250° F. from four to twelve minutes at two-minute intervals. The North American Phillips Geiger-counter X-Ray spectrometer was used to determine whether or not any crystalline phase was present at the

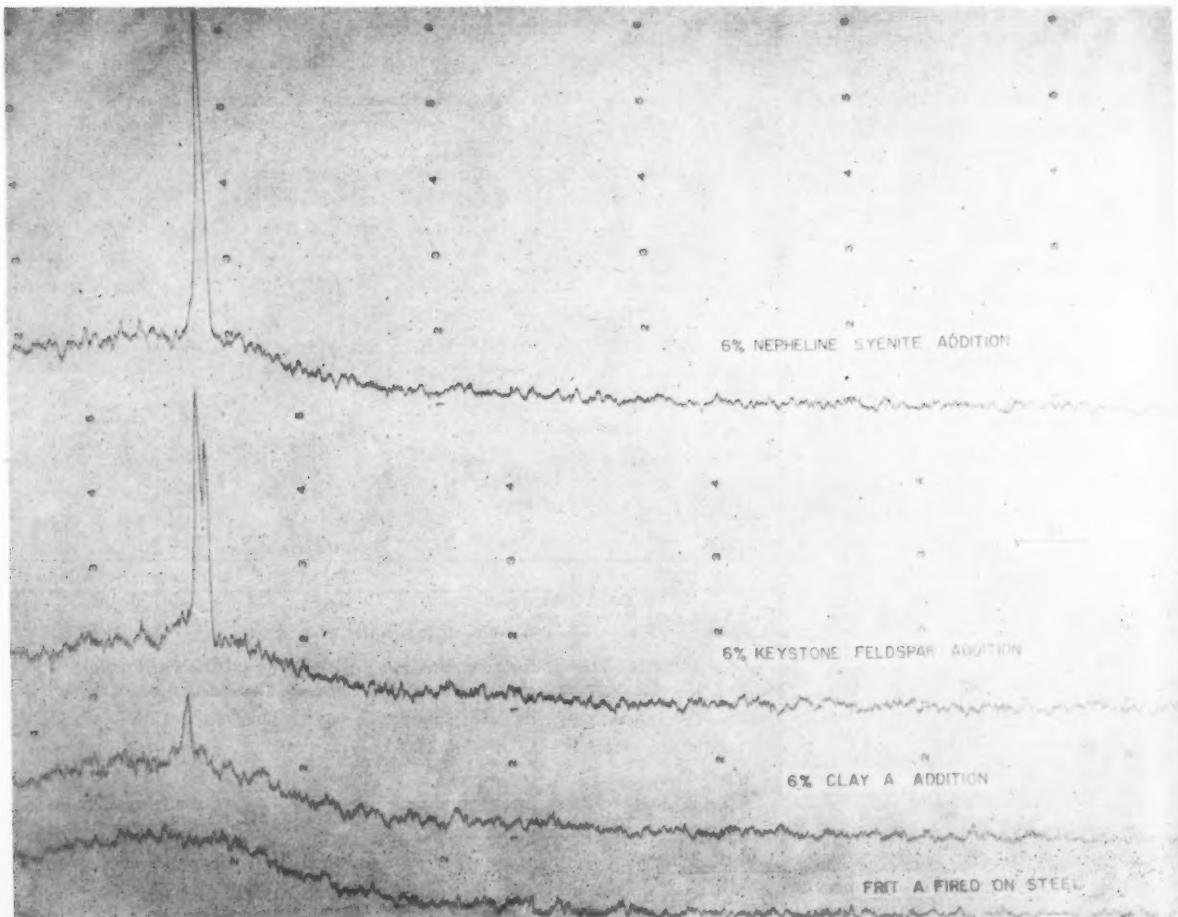
#### Editor's Note:

Mr. Healy's article represents a prize winning paper in Ferro Corporation's 1950 Contest for best student papers on porcelain enameling. At the time this paper was prepared, the author was a student at the University of Illinois.

the same mill additions, the third frit (glassy component in series B enamels) matured at 1300-1500° F.

The frits and specific mill additions (see Table I) were milled to a fineness of four to six grams retained on a 200-mesh screen according to Porcelain Enamel Institute

*Figure 1—Complete X-ray patterns of frit A (plain) and frit A with various mill additions fired on sheet steel at 1550° F. for four minutes.*



surface of the fired specimens. An automatic recorder, which registers the impulses received from the geiger tube and draws a curve representing angle of X-ray diffraction versus intensity, was employed in conjunction with the X-ray spectrometer. This eliminated the manual operating counter or in the other X-ray units, the photographic film. A complete record may be obtained in 45 minutes. However, a record of the major intensity peaks of a known crystalline phase may be made in less than five minutes. This X-ray unit gives a surface analysis. The results of the X-ray diffraction analysis are given in Tables I and II.

The X-ray diffraction patterns of frit A, 6% clay addition, 6% Keystone feldspar addition, and 6% nepheline syenite addition fired at 1550° F. for four minutes are presented in Figure 1.

#### Discussion of results

1. *Effect of composition:* The influence of frit compositions was clearly illustrated by comparing the weight intensities of the feldspar and alpha quartz peaks of enamels A5 and B2. (See Figures 2 and 4.) The intensities were similar at 1600° F. and 1200° F. respectively; hence, the quantities of the crystalline phases present were approximately equal even though the difference in firing temperature was 400° F.

2. *Effect of firing temperatures:* The decrease of the weight intensities in the diffraction patterns of the crystalline phases indicated gradual solution of the Keystone feldspar and nepheline syenite as the temperature was increased. (Illustrated in Figures 2, 3, and 4). The rate of solution was not relatively greater for Keystone feldspar than for nepheline syenite. This is true for an enamel of composition A from 1550° F. to 1650° F.; however, to the contrary, nepheline has been reported to be less refractory than feldspar.<sup>5</sup>

3. *Effect of firing time:* An increase in firing time had an erratic effect on the peak's intensities, although there were small differences in the intensities of the entire range. Figures 5 and 6 show a very slight

increase and then a very slight decrease in intensities with time. Subsequently, firing time had little influence on the solubility.

#### 4. *Effect of quantity of refrac-*

*tory mill additions:* Compared proportionally, the weight intensities for feldspar peaks at 1550° F. and 1650° F. of enamel A6 (3% Keystone feldspar) were one-half those of enamel

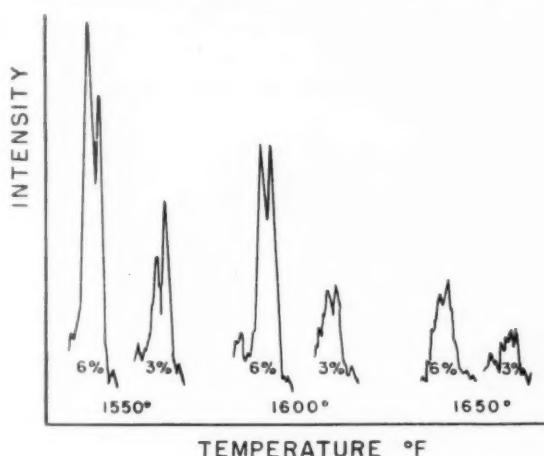


Figure 2—Effect of temperature on solubility of 6% Keystone feldspar in frit A.

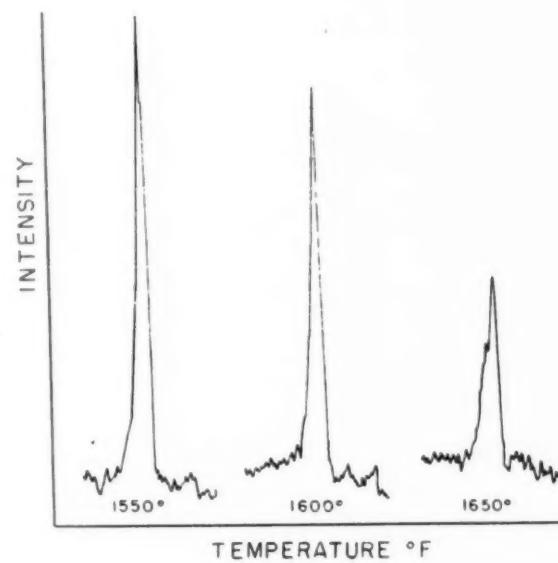


Figure 3—Effect of temperature on solubility of 6% nepheline syenite in frit A.

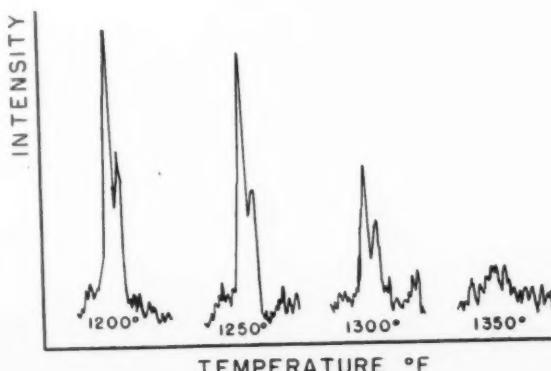


Figure 4—Effect of temperature on solubility of 6% Keystone feldspar in frit B.

A2 (6% Keystone feldspar). The major peak intensities of each are in Figure 7. This further emphasizes the value of this technique for determining relative quantities of crystalline phases present at the surface of porcelain enamels.

5. *Analysis of melting process:* In order for the crystalline refrac-

tory mill additions to be soluble in the glassy frit during the firing of the enamel on sheet steel, enough energy had to be supplied to: (a) increase the atomic mobility, in the glass, which in turn broke the bonding forces in the crystals, and (b) increase the vibrations of the atoms in the crystal, therefore requiring less

outside energy to break the bonding forces.

After the crystalline forces were broken, a concentration gradient was set up in the glass. Therefore, the energy had to be sufficient to cause diffusion of the silicon and aluminum atoms away from the remaining crystals. Silicon and aluminum atoms which are small in size and high in charge, cause a decrease in atomic mobility. Energy was given to the masses by increasing the temperature, causing an increase in melting of the crystals.

At the firing temperature where the time study was made, the energy supplied was not sufficient to disrupt the concentration gradient; therefore, the solubility of the crystals was stopped by low atomic mobility at the crystal interface.

#### Summary of results

1. Refractory mill additions—feldspar, nepheline syenite, and free quartz from the clay—do not readily dissolve in the firing of sheet steel ground coat enamels.

2. The rate of solubility is a function of firing temperature; and the solubility increases as the firing temperature increases.

3. The normal firing time of enamel objects has little effect on the solubility of refractory mill additions.

4. The North American Phillips X-ray spectrometer is quite suitable for examination of the presence of crystalline phases at the surface of fired enamel specimens.

5. It is recommended that further analysis be made of the effect of (1) fluidity, (2) particle size of frit and refractory mill additions, (3) firing time at various temperatures, and (4) physical and chemical properties of the enamel with certain quantities of crystalline phases present.

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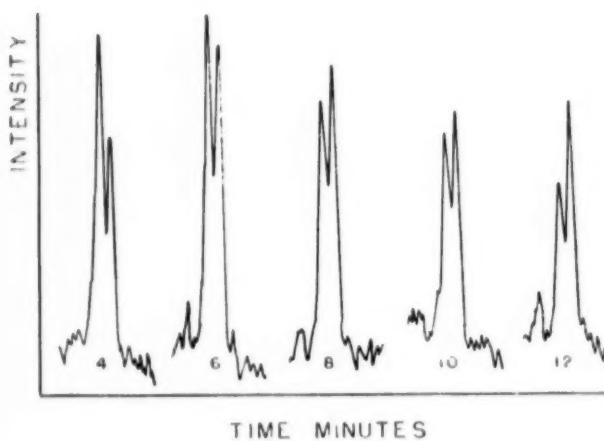


Figure 5—Effect of time on solubility of 6% Keystone feldspar in frit A.

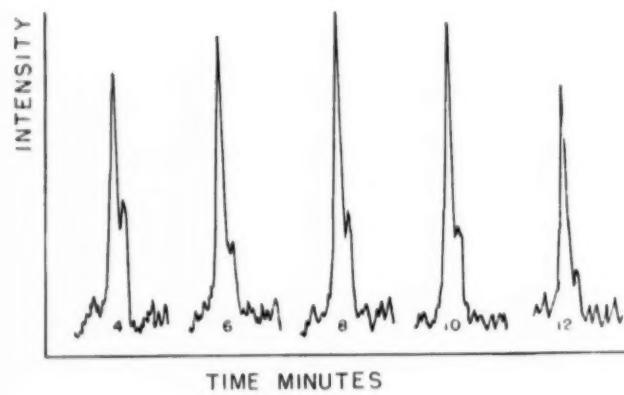


Figure 6—Effect of time on solubility of 6% Keystone feldspar in frit B.

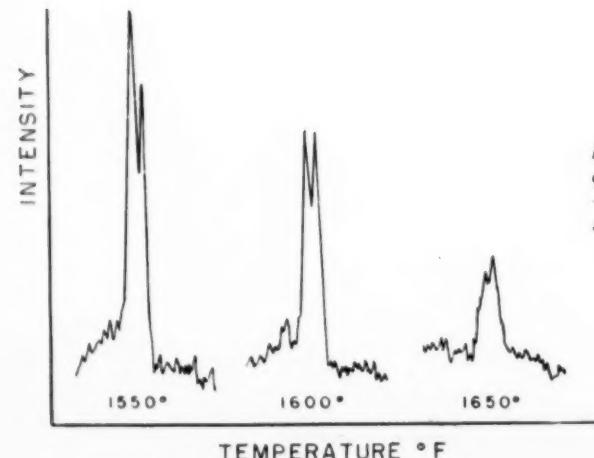


Figure 7—Effect of quantity on solubility—3% and 6% Keystone feldspar in frit A.

# Flow coating at Maytag

a technical description of flow coating parts for automatic washing machines

fourth in a series

by Max Schmiedeke, Jr. • JUNIOR TECHNICIAN, THE MAYTAG COMPANY, PLANT NO. 2, NEWTON, IOWA



The flow coating operation at Plant No. 2, where Maytag automatic washers are produced, consists of three phases — metal preparation, application of the flow coat paint, and baking the paint to the proper cure.

## Metal preparation

The parts to be flow coated are first put through a 6-stage phosphatizing machine, including an alkali-emulsion cleaner, a phosphatizing solution, and a chromic-phosphoric acid rinse.

## Flow coating process

After the metal preparation has been accomplished, the parts are then put through the flow coat machine, where the flow coat paint is applied. The paint is applied by eight  $\frac{1}{4}$ -inch whirljet spray nozzles mounted as follows:

- 4 whirljet spray nozzles mounted on two rotating arms, which are mounted on the sides of the flow coating chamber.
- 2 whirljet spray nozzles mounted on one revolving arm, which is mounted on the bottom of the flow coating chamber.
- 2 whirljet spray nozzles mounted on two stationary arms, which are mounted at the top of the exit from the flow coating chamber.

The flow coat paint is supplied to these arms at a viscosity of 18.5 to 19.0 seconds and a temperature of 85° to 90° F., with a fluid pressure

of 10 lbs. for the two rotating side arms, 5 lbs. for the two stationary top arms, and 10 to 12 lbs. for the revolving bottom arm.

Viscosity checks are made every half hour by the flow coat machine operator using a #3 Ford cup.

The thickness of the flow coat paint applied is between 0.3 and 0.6 mils.

After emerging from the flow coating chamber, the parts pass through a 700-foot enclosed drainage chamber. From the drainage chamber the parts pass through a reinforcing

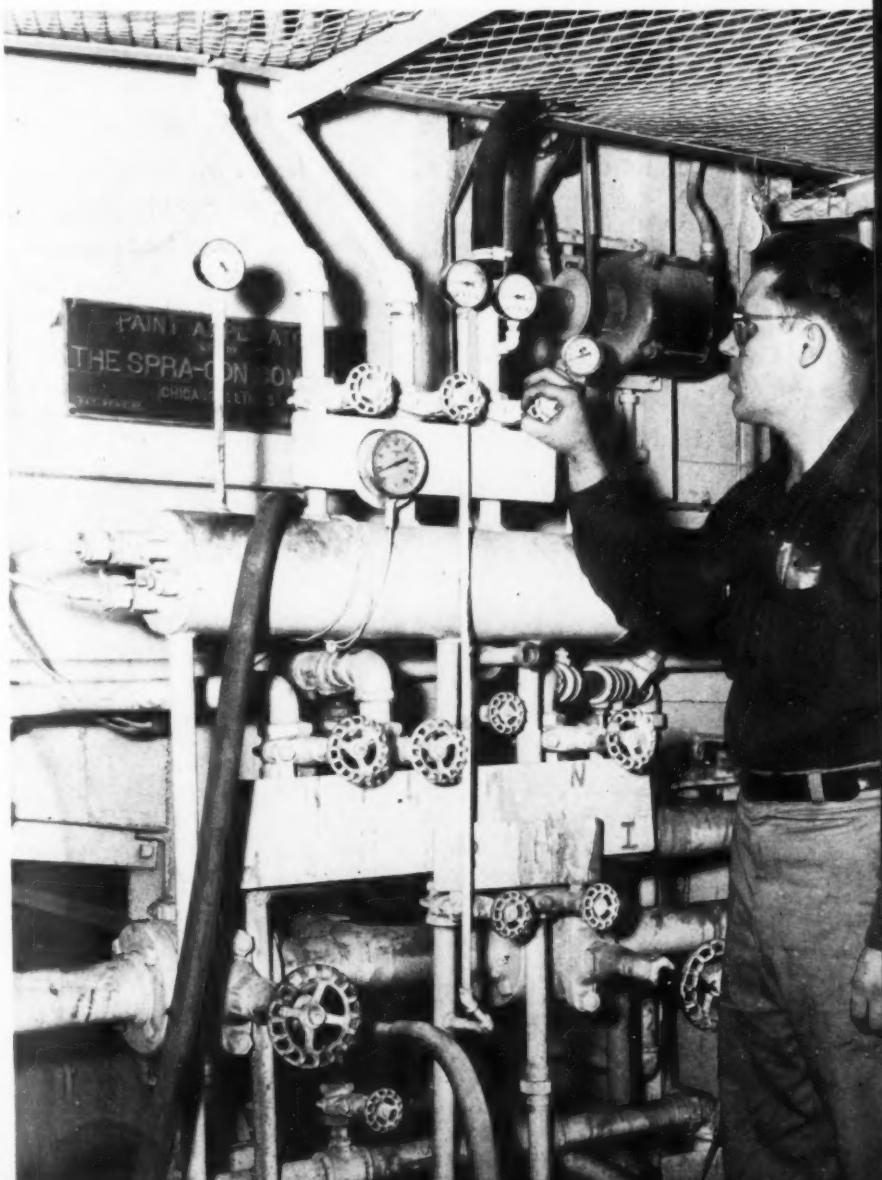
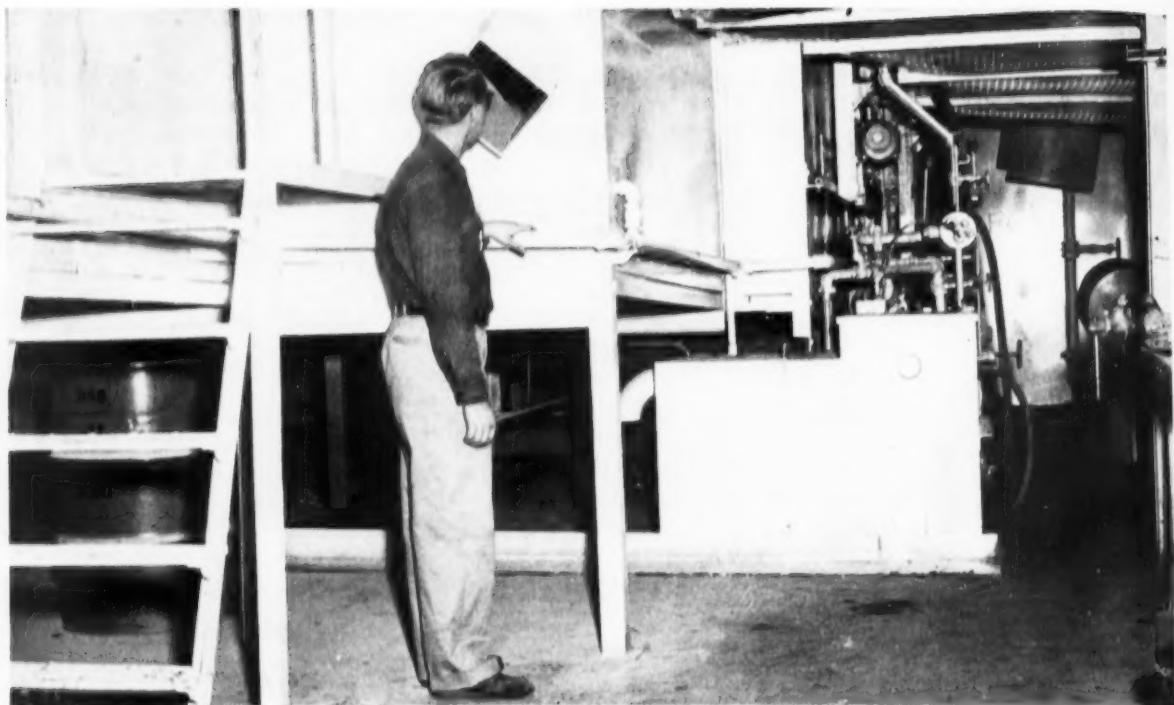


Photo shows the author checking a paint flow gage.



An overall view of flow coating equipment installed at Maytag's Plant No. 2.

booth where flow coat paint is applied with a spray gun, having a fluid pressure of 6 lbs., and an air pressure of 62 lbs. This flow coat paint is supplied to the gun through a circulatory system direct from the paint mixing room. The flow coat

paint for the reinforcing has a viscosity of 21.0 seconds.

#### Prime coat baked for 30 minutes

After leaving the reinforcing booth, the parts go directly to the prime coat baking oven, which is gas-fired.

Here they are baked for approximately 30 minutes at a temperature of 365° F. When the parts have received their bake, they are inspected and placed on the top coat conveyor where they receive their final coat of paint.

## Flow coating conventional washer parts at Maytag

by Matt Heuerly • ASSOCIATE EDITOR

A NUMBER of the components for the conventional Maytag washer manufactured in Plant No. 1 get their primer coat in a flow coating machine. This process has been in use in this plant since July, 1950.

Parts which are flow coated include skirts, lids, legs, wringer brackets, hose nozzles, motor bases, and channel iron for base frames.

A few critical parts, such as wringer components, power legs, wringer release, wringer cap and lid lugs, are still sprayed in prime coat.

The flow coat machine is served by a 112-foot long conveyor. The

prime coat is fed through four nozzles on each side of the machine (totaling eight).

Both aluminum and steel parts are flow coated. Parts such as legs get a 1.24-mil thickness of primer. The prime coat is baked at 315° F. for thirty minutes (chain speed 26.3 feet per minute).

John Wert, general foreman of assembly and paint, and Charles Crook, paint room foreman, Plant No. 1, say that the process has worked very satisfactorily, resulting in a more even coat and the elimination of fumes. In short, the process uses

more thinner and less labor. The entire system is conveyorized.

#### Assembled before finish coat

After the prime coat is baked, the entire machine is assembled and washed with naphtha as a unit. It then goes to a dry sanding room, where No. 130 paper is used.

A ten-foot infra-red oven is employed to evaporate any gas fumes that may be pocketed in the unit, and to pre-heat the parts.

The finish coat is sprayed, from .7 to 1.1 mil thickness for each coat, giving a total finish thickness of 1.7 to 2.1.

Following a 40-foot air dry, the finish coated washing machine goes into the baking oven for 29 minutes at 300° F. Chain speed is 16.4 feet per minute.

The conveyor then carries the finished unit to the assembly conveyor.

# Hot spray application of lacquers and paints

**savings up to fifty per cent reported for some product finishing operations**

THE principle of hot spray application, reducing paint viscosity by heat instead of volatile thinners, makes it possible to deposit a paint film of higher solids content with fewer passes of the spray gun. In many cases, fewer coats are necessary to achieve desired film thickness, production is increased, and time and labor are reduced.

For product finishing in the metal product field the hot spray system may offer a double dividend: (1) reported savings of up to 50% in product finishing time and labor; (2) controlled quality during the entire spraying operation regardless of weather, season or time of day. Among the successful applications of hot spray are household appliances, mechanical equipment, mobile equip-

ment, office equipment, aircraft assemblies and prefabricated housing units.

The hot spray process today is getting added attention because equipment is inexpensive to install, simple to operate, and because specially-developed materials have been formulated exclusively for use in controlled-temperature application systems. The control temperature unit and controlled temperature application lacquers and enamels were precision-engineered together in a Cleveland research laboratory.

## Steam used to heat paint

One controlled temperature unit is a compact heat-exchanger installed in the fluid line of the gun. Using steam as the heating medium, the

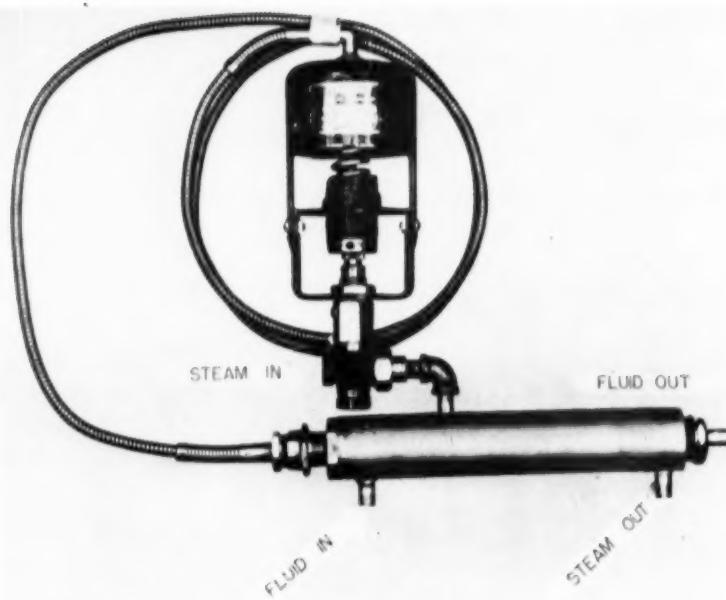
unit heats the paint on its way to the spray gun. The unit may be mounted, or it may be held in one hand, leaving the other free for the spraying operation. This hot spray system uses standard spray gun with room temperature air pressure and requires no special circulating equipment.

## A minimum of evaporation

Because the main source of reduction is heat, constantly and uniformly applied and controlled, users report minimum evaporation, with lacquers and enamels unaffected by temperature changes and humidity. The solvent-to-solids ratio of the material tends to remain constant. Controlling these variables assists in obtaining uniform quality and minimum rejects. →

*This photograph shows hot spray equipment in use at the plant of Douglas Aircraft, in El Segundo, California.*





*Hot spray equipment for automatic spray booth operation.*

At a uniform fluid flow, paint to be sprayed reaches equilibrium temperature (approximately 160° F.) in about ten seconds and remains constant so long as flow is maintained. Since the capacity of this type of heater is small, and it operates on a quick exchange of heat to material, any paint left in the heater may be ejected in a few seconds and replaced with fresh material. This compara-

tively new system is designed to eliminate heat waste, pumps or long lines containing hot paint and use of electrical current.

In addition to its advantages in time and labor savings and improved quality finishes, the hot spray system offers these bonus values to the product finishing industry:

1. *Blushing is reduced, often eliminated.* Hot spray reduces blushing

because it minimizes the effects of solvents and atmospheric change which often produce blushing.

2. *Solvent costs are measurably lowered.* Solvent costs per pound of solids applied are 10% to 15% lower, because heat replaces their function.

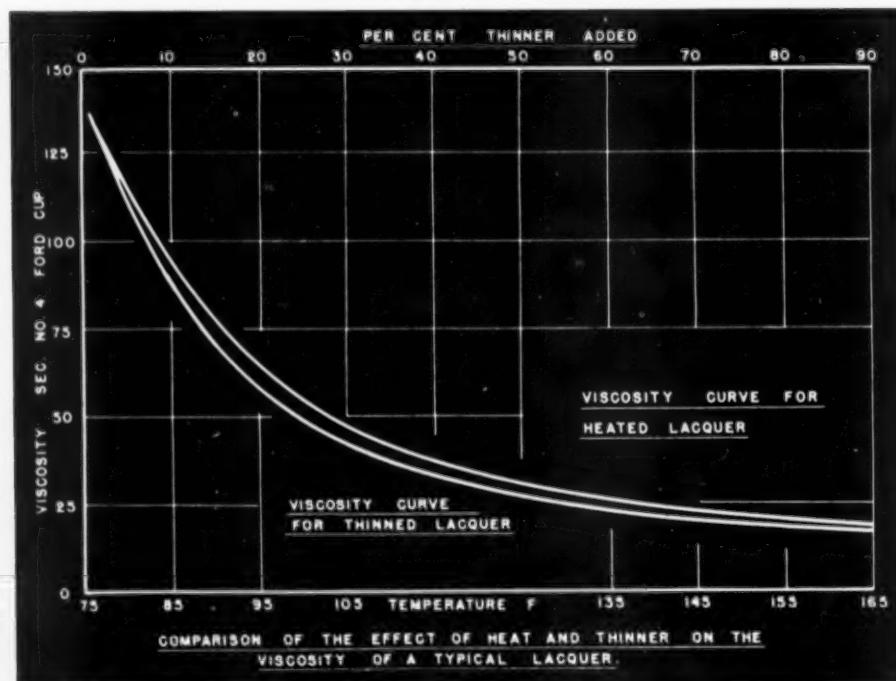
3. *Orange peel is greatly reduced.* Finishes flow out better than conventional finishes, reducing the tendency toward orange peel.

4. *Sags and runs are minimized.* Finishes have less tendency to sag. In some cases, at least twice the conventional film thickness can be applied in one coat.

5. *Sanding labor is cut to a fraction.* Exceptional flow out and freedom from overspray in hot spray finishes eliminate much of the sanding between coats required by conventional spray.

The controlled-temperature spray equipment may be used for both individual spray gun and automatic spray booth operation. It is not necessary for operators to learn any new or special skills to successfully operate either unit.

*For more complete information on this process and equipment, write direct to finish on your company stationery.*



*This chart shows how the hot spray system provides the desired viscosity through controlled temperature rather than the addition of thinners — thereby maintaining a maximum solids content.*

# A challenge to the consumer durable goods industries

a message to the manufacturers of home appliances — with suggestions  
for management and sales management

by Robert A. Weaver • CHAIRMAN OF THE BOARD, FERRO CORPORATION, CLEVELAND, OHIO

**F**RANKLY, I'm optimistic about the home appliance industry and I will present some of the factors which in my opinion overcome the doleful prediction of the pessimists that the market for your products is saturated, people have over-bought, etc.

#### Long range optimism

My optimism is not related to the immediate future of business, but is based on what I think the future holds for all of us. To get this picture correctly, you have to realize that the world is over three billion years old, and the history of man so far is traced back at least 150,000 years. During those 1500 centuries of known human life, we have had almost abysmal poverty for most of the people up to about 1850.

Our present psychology—our present thinking—cannot help but be affected by those centuries of poverty, danger and hopelessness. We are born with a strong tinge of pessimism in our nature. However, the world in which we are living today is completely different. It is a magic world and almost any dream may come true.

During all but the last 100 years of those 1500 centuries, there was not the slightest possibility of producing enough goods to make the majority of people happy in terms of material comforts of life, but today things are different. The solution of economic problems, aside from governmental interference, is today in the hands of scientists and business men . . .

#### Population is important

For the long pull, you depend on the number of families in this coun-

try to purchase your products. Obviously, you have to go back to population growth to get any worthwhile figures. The relative growth from 1940 to 1950 was much greater than the population experts had expected. The addition of 20 million people since 1940, compared to an increase of only 9 million in the previous decade, certainly broadens the sales base for all consumer products. Last year the Census Bureau estimated that by 1960 there would be close to 170 million people in the United States. This figure will probably be even higher.

#### Household buying units increase 25% in 10 years

Strangely enough, the number of families or households have increased at a higher percentage rate than population. These families represent the actual buying units for appliances, and it is a fact that families for the past few years have been increasing at a greater rate than population; for example, population increased 15% between 1940 and 1950, while the number of households jumped 25%.

Even more important than the increase in number of families is the fact that family incomes have grown substantially since 1940. Since 1940 families in the upper group, with incomes of over \$5,000 have increased 420%. In that same period the families in the lowest income group decreased 65%. Adjusting incomes to the increased cost of living, per capita personal or real income has still increased almost 40% since 1940.

#### Consumer expenditures up 100% for appliances

To be specific (in conjunction with

the appliance business), consumer expenditures for major appliances have increased over 100% since 1940.

There is still a lot of argument about the number of homes that are going to be built in 1952, but my guess is around the million mark, and certainly for the period between 1950 and 1960, we should have 10 million new homes. They are prospects for appliances as well as a lot of new products which imagination may have manufacturers building during that period.

Frigidaire, General Electric, and Westinghouse are currently placing orders for porcelain enameling equipment that will double their past productive capacity. These companies have excellent sales projection departments and I think confirm the optimistic ideas I am presenting . . .

#### Sales "push-power" is the answer

Now, let's be realistic about the current situation. We all have some tough months ahead, and I think the deciding factor in the success or failure of any (appliance manufacturing) business will depend upon the intelligence, ingenuity and push-power of the sales department.

Despite the fact that we fought a tremendous world war in the past decade, we have managed to raise the material standard of living enjoyed by most Americans very substantially. As this standard of living has risen, right along with it has risen the share of our total production which prospective customers could take or leave, without any marked personal inconvenience.

A large part of our production goes into goods and services which  
to Page 63 →

## Steel kitchen cabinet manufacturers hold first annual meeting

THE Steel Kitchen Cabinet Manufacturers Association, officially organized last September, conducted its first annual meeting in Cleveland, Ohio, December 5.

Presiding at the all-day meeting, held at the Cleveland Hotel, was M. M. Miller, president of Miller Metal Products, Inc., and president of the newly-formed Association.

Assisting in conducting the meeting were the Association's vice president, F. F. Dugan, general sales manager, American Central Division of Avco Manufacturing Corp., Connersville, Indiana, and Arthur J. Tuscany, executive secretary and treasurer of the Association.

The new officers were installed in the morning at a meeting of the board of directors, which, together with the

president and vice president, includes:

Thomas W. Hardy, Murry Corporation of America; Harry S. Lawrence, Capitol Kitchens; Robert A. MacNeille, St. Charles Manufacturing Co.; Charles A. Morrow, Mullins Manufacturing Corp.; C. S. Motter, Morton Manufacturing Co.; and F. E. O'Connor, Geneva Modern Kitchens, Inc.

President Miller estimated that the membership comprises about 95% of the output of manufacturers who sell their products under their own name. It was indicated that jobbing manufacturers would probably be included in the membership at a later date.

Committees which are in the process of being organized include: Sales Promotional; Standard and Simplification; Trade Statistics, and

Packaging, Transportation and Traffic. The entire board of directors serves as a committee on Government Relations.

### Set meeting dates

It was pointed out that the Association plans to hold four meetings a year, on the first Wednesday of the months of March, June, September and December, with the annual meeting to be held on the December date.

The afternoon session was devoted to a "Symposium on the Washington Picture." Sterling MacDonald, Acting Chief, Home Furnishings Branch, Office of Price Stabilization, and Sol W. Metzger, of Consumer Durable Goods Division, National Production Authority, were present, and answered a number of questions which were

*Photo taken during the first annual meeting of the Steel Kitchen Cabinet Manufacturers Association.*





Miss Elizabeth Gordon, editor of *House Beautiful*, discusses new designs in kitchen cabinets with M. M. Miller, president of the Association.

finishfoto

in the minds of member company executives.

#### Urge study of changes in kitchen area

As guest speaker at the dinner, Miss Elizabeth Gordon, editor of *House Beautiful*, urged the manufacturers to take cognizance of basic changes being made in modern kitchens.

These changes are being brought about by the following factors:

1. The disappearance of servants and maids.
2. Emergence of the kitchen as the "heart" of family activities.
3. Necessity for more storage area for pre-cooked foods.
4. Inflation—which is causing the size of the kitchen in new houses to shrink along with the size of other rooms.

#### Color becoming very important

The disappearance of the white

clinical laboratory appearance of the kitchen, said Miss Gordon, is producing problems of color harmony, especially with large areas of the kitchens in many new houses being visible from L-shaped living rooms. She suggested that perhaps the manufacturers could supply home owners with steel kitchen cabinets which have only the prime coat applied and baked in the factory, with the home owners applying the cover coat in any color they prefer.

Another problem affecting the kitchen is that of component ranges which are buried in the kitchen cabinets. Still another one is the absorption of the laundry into the kitchen, providing more counterspace.

Miss Gordon urged the manufacturers to "face up to the changing nature of the kitchen" before producers of other types of cabinets get a foothold in the market for the changing kitchen.

#### Association Members

Acme Metal Products Corporation, Dover, New Jersey  
 American Central Division, Avco Manufacturing Corporation, Connersville, Indiana  
 Berger Manufacturing Division, Republic Steel Corporation, Canton, Ohio  
 Crosley Div., Avco Manufacturing Corp., Cincinnati, Ohio  
 Elgin Cabinet Division, Acme Visible Record Co., Elgin, Illinois  
 Geneva Modern Kitchens, Inc., Geneva, Illinois  
 Harrison Steel Cabinet Company, Chicago, Illinois  
 Hubeny Brothers, Inc., Roselle, New Jersey  
 Ing-Rich Metal Products Company, East Palestine, Ohio  
 Lyon Metal Products, Inc., Aurora, Illinois  
 Marvel Metal Products Company, Chicago, Illinois  
 Miller Metal Products, Inc., Baltimore, Maryland  
 Morton Manufacturing Company, Chicago, Illinois  
 Mullins Manufacturing Corp., Warren, Ohio  
 Murray Corporation of America, Scranton, Pennsylvania  
 Palley Manufacturing Company, Pittsburgh, Pennsylvania  
 St. Charles Manufacturing Co., St. Charles, Illinois  
 Shirley Corporation, Indianapolis, Indiana  
 Tracy Manufacturing Company, Division of Edgewater Steel Co., Pittsburgh, Pennsylvania

Association officers and directors: Front row—Arthur J. Tuscany, executive secretary-treasurer; F. F. Dugan, vice president; M. M. Miller, president; Back row—F. E. O'Connor, Robt. A. MacNelle, Chas. A. Morrow, Harry Lawrence, and Thomas W. Hardy. C. S. Motter is not shown in photo.



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# NEMA holds 25th annual meeting

**Lincoln elected president of National Electrical Manufacturers Association;  
Newcomb elected chairman of NEMA major appliance division**

**A**T the 25th annual meeting of the National Electrical Manufacturers Association, held recently in Atlantic City's Haddon Hall, J. F. Lincoln, president of The Lincoln Electric Company, Cleveland, Ohio, was elected to head the Association during 1952. The Association's retiring president is C. W. Higbee, of U. S. Rubber Company.

Five vice presidents were also elected: Arthur A. Berard, president, Ward Leonard Electric Co., Mt. Ver-

non, N. Y.; J. W. Corey, president, The Reliance Electric & Engineering Co., Cleveland, Ohio; J. W. Jewell, vice president, Westinghouse Electric Corporation, Pittsburgh, Pa.; Alan F. Sheldon, president, Kennecott Wire &

of the Appliance Sections of NEMA were elected as follows:

**Refrigerator Section:** Chairman, R. A. Rich, vice president, refrigeration division, Philco Corporation, Philadelphia; Vice Chairman, W. M. Timmerman, acting general manager, household refrigerator department, major appliance division, General Electric Company, Bridgeport, Conn.

E. R. Wolfert, manager of engineering, Seeger Refrigerator Com-



J. F. LINCOLN, NEMA PRESIDENT



FRANK L. SACHA

STANLEY WOLKENHEIM



Cable Company, Phillipsdale, R. I.; and Hoyt P. Steele, executive vice president, Benjamin Electric Manufacturing Co., Des Plaines, Illinois.

L. C. Hall, president, Stackpole Carbon Company, St. Marys, Pa., was reelected treasurer.

## Newcomb heads appliance division

T. J. Newcomb, sales manager, electric appliance division, Westinghouse Electric Corporation, Mansfield, Ohio, was elected chairman of NEMA's Major Appliance Division. He succeeds B. C. Neece, vice president, Landers, Frary & Clark, New Britain, Connecticut.

J. B. Poteat, general manager, range and water heater department, major appliance division, General Electric Company, Louisville, Ky., was elected vice chairman of the Division.

## New section officers

New chairmen and vice chairmen



T. J. NEWCOMB

RAYMOND A. RICH



pany, Evansville, Indiana, is chairman of the Refrigerator Section's general engineering committee.

**Water Heater Section:** Chairman, Stanley Wolkenheim, marketing director, water heater division, A. O. Smith Corporation, Milwaukee; Vice Chairman, J. F. Carroll, manager, product planning, Hotpoint, Inc., Chicago.

F. B. Knight, production manager, Clark Division, McGraw Electric Company, Chicago, is chairman of the Water Heater Section's technical committee.

**Range Section:** Chairman, Frank L. Sacha, manager of sales, Gibson Refrigerator Company, Greenville, Michigan; Vice Chairman, W. E. Saylor, electric range and water heater sales manager, Nash-Kelvinator Corporation, Detroit.

F. H. McCormick, assistant chief engineer, Frigidaire Division, General Motors Corporation, Dayton, Ohio, was reelected chairman of the Range Section's general engineering committee.

**Household Sink Units:** Chairman, Bertram Given, executive vice president, Given Manufacturing Company, Los Angeles; Vice Chairman, Terrence D. Kennedy, sales manager, Kitchen Aid Home Dishwasher Division, Hobart Manufacturing Company, Troy, Ohio.

J. F. Carroll, Hotpoint, Inc., Chicago, is chairman of the Household Sink Units Section's technical committee.

**Farm & Home Freezer Section:** Chairman, L. C. Blunt, supervisor of advertising, refrigeration consumers relations department, International Harvester Company, Chicago; Vice Chairman, F. J. Bommer, vice president, Sanitary Refrigerator Company, Fond du Lac, Wisconsin.

E. R. Wolfert, Seeger Refrigerator Company, Evansville, Indiana, is chairman of the Farm and Home Freezer Section's general engineering committee.

**Housewares Section:** Chairman, John A. Sullivan, division vice president, home appliance marketing, General Mills, Inc., Minneapolis; Vice Chairman, Stanley G. Fisher, sales manager, electric housewares divi-

sion, Landers, Frary & Clark, New Britain, Connecticut.

#### To expand housewares gift campaign during 1952

A preview of the "electric housewares gift campaign," revealing that the program is being greatly expanded for 1952, and a review of the 1951 campaign, were presented to industry officials at a meeting of the Housewares Section.

Speakers at the meeting included Gordon Ritter, 1951 chairman of the Section and director of sales, electric housewares division, Arvin Industries, Inc.; J. P. McIlhenny, chairman of

#### NEMA Board of Governors

*Elected for a one-year term:*

R. S. Fleshiem, ass't to vice president, general machinery division, Allis Chalmers Mfg. Co.

*Elected for a two-year term:*

Whipple Jacobs, president, Phelps Dodge Copper Products Corp.

*Elected for a three-year term:*

A. F. Wakefield, president and general manager, The F. W. Wakefield Brass Company

*Re-elected for the same term:*

P. M. Bratten, general sales manager, Frigidaire Division, General Motors Corporation

C. T. Lawson, vice president in charge of sales, Kelvinator Div., Nash-Kelvinator Corporation

H. G. Blakeslee, vice president and general manager, Cory Corp.

Max McGraw, president, McGraw Electric Company

M. E. Henning, executive vice president and general manager, Penn Electric Switch Co.

John L. Busey, vice president, General Electric Company

R. S. Edwards, president, Edwards Company, Inc.

W. A. Elliott, president, Elliott Company

A. F. Metz, president, The Okonite Company

R. E. Murphey, vice president - sales, I-T-E Circuit Breaker Co.

Geo. C. Thomas, Jr., president and treasurer, Thomas & Betts Co.

D. F. G. Eliot, vice president, Western Electric Company, Inc.

the Section's sales promotion committee and vice president in charge of sales, Waring Products Corporation; and Ralf Shockey, president of Ralf Shockey & Associates, Inc., merchandising counselors.

Commenting on the campaign's success for the past year, McIlhenny reported that in the current promotion program the industry finally hit on a successful formula for achieving the goal of a sales volume of a billion dollars a year.

In outlining the program for 1952, it was explained that the widened scope of the campaign was based on dealer's acceptance of the basic selling idea. Five ways in which the program will be intensified are through (1) a larger and more widely circulated retail merchandising plan book, (2) a greater mass distribution of the industry's new campaign poster, (3) a larger display kit, (4) an expanded trade paper campaign, and (5) a newly-added 20-city research study.

A new 32-page Spring Plan Book to be available free to dealers, was presented at the meeting. Some 100,000 copies of the book, which is the largest in the campaign's history, will be distributed to gain, it is believed by industry members, the greatest dealer saturation of any national local level campaign. Figures were released to show that the book will be distributed as follows: 68,000 retailers; 9,000 manufacturers; 9,000 distributors; 6,000 area committees; 1,000 electric light and power companies; 1,000 electric leagues; 3,000 newspapers; and 3,000 miscellaneous.

#### Advertising and promotion programs for major appliances

Advertising and promotion programs of the Range, Water Heater and Farm and Home Freezer Sections of NEMA were also approved at the Section meetings.

In formulating plans for the continuation of activities at the architect and builder, home economist, school management, plumber and dealer levels, the Sections felt that, even though production of major electric appliances faces an uncertain fu-

to Page 84 →



## Another leading stove builder who depends on **Verson**

Prominent in the ranks of well known stove builders who use Verson equipment is the Dixie Foundry Company, Cleveland, Tennessee. The photo above shows a part of the Dixie Foundry pressroom and a few of the many Verson machines in use. Among these machines are press brakes and both mechanical and hydraulic presses.

Verson's long experience in the development and manufacture of press equipment

and tooling for the cooking and heating appliance industry is plus value for you. Verson engineers are familiar with the stamping problems of the industry and have the "know how" to solve them.

While high demand makes delivery of press equipment a problem at present, we urge you to start your long range planning now. We will be happy to make recommendations.

Originators and Pioneers of Allsteel Stamping Press Construction

## **VERSON ALLSTEEL PRESS COMPANY**

9320 South Kenwood Avenue, Chicago 19, Illinois

So. Lamar at Ledbetter Dr., Dallas 15, Texas

A VERSON PRESS FOR EVERY JOB FROM 60 TONS UP

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING  
DIE CUSHIONS • COMPRESSION AND TRANSFER MOLDING PRESSES

# Stove men attend winter meeting and management conference

**Muhlbach reelected head of Institute of Cooking and Heating Appliance Manufacturers**

THE winter meeting and management conference of the Institute of Cooking and Heating Appliance Manufacturers, held in Cincinnati's Netherland Plaza, was featured by addresses of top men in business and government on the subjects of deep interest to the industry — such as price controls, defense contracts, steel outlook, and civilian production in a defense economy.

The general program was opened Monday afternoon, December 3, with the "President's Annual Report," pre-

sented by Walter F. Muhlbach, director of distribution and research, Florence Stove Company, who was reelected to head the Institute for 1952.

R. F. Sentner, assistant executive vice president, United States Steel Company, followed with a report on "The Steel Supply Picture for 1952." Mr. Sentner's talk is reported elsewhere in this issue.

At Tuesday morning's general session, Robert A. Weaver, chairman of the board, Ferro Corporation, presented a stirring address entitled "A

Challenge to the Consumer Durable Goods Industries." Mr. Weaver's talk is also reported in this issue.

## **Contract opportunities in Air Force program**

Colonel W. Hyme followed with suggestions on "Defense Contract Opportunities in the Air Force Procurement Program."

Unlike procurement for other Military agencies, Colonel Hyme stated that Air Force procurement is centralized at Wright Field, Ohio, and

*Photo taken during luncheon session, December 4, in Netherland Plaza's Hall of Mirrors.*

*finisfoto*





**finishfoto** The University of Cincinnati Glee Club entertained at the annual banquet and president's reception.

pointed out that the best opportunities are in the sub-contract field. The speaker specifically pointed out that any manufacturers interested in defense contracts must be aware that "tolerances of performance are extremely more critical today" in this era of the jet planes.

#### Price controls

Price controls were the subject of Edward F. Phelps, Jr., assistant director of the Office of Price Stabilization.

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#### ICHAM Officers for 1952

President: Walter F. Muhlbach, director of distribution and research, Florence Stove Company.

Executive Vice President, Bolling Jones, Jr., president, Atlanta Stove Works, Inc.

Secretary-Treasurer: Marc W. Pender, American Stove Company.

Vice President, Meetings: Sheldon Coleman, president, The Coleman Company, Inc.

Vice President, Memberships: C. M. Dunn, vice president, Estate Stove Company.

Vice President, Publications: A. B. Ritzenthaler, vice president, The Tappan Stove Company.

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Phelps' talk brought out three important problems for which answers are needed. He listed them as follows: (1) Need answer to "soft" markets; (2) Question of de-controls (no de-controlling of major commodities planned for now); and (3) How to solve problem of industries which are feeling sharper impact due to drastic cut-backs and resultant increasing costs (one answer is defense contracts).

#### Availability of materials in a defense economy

Harry J. Holbrook, director, Consumer Durable Goods Division of National Production Authority, was guest speaker at Tuesday's luncheon in the Hall of Mirrors. His subject was "Availability of Materials in an Arsenal Economy."

#### CMP — a challenge to manufacturers' ingenuity

"CMP is a challenge to your ingenuity to make the most with the least amount of material available," Holbrook told his fellow stove manufacturers (he is on leave of absence from the Norge Division of Borg-Warner Corporation where he had been sales manager of Norge's electric range and water heater section).

#### Nickel — and jet plane program

He warned that copper and nickel are likely to get tighter, adding that the jet plane program has sharply increased military need for nickel. Relief in the nickel shortage cannot be expected immediately, although expansion of nickel production in both Canada and Cuba is said to be ahead of schedule. Expansion programs in the copper industry are now in progress, but the copper outlook will not brighten much until later this year or early 1953.

PRESIDENT MUHLBACH



Holbrook suggested that the stove manufacturers reroute wire in electric ranges, and seek new types of valves for gas ranges as possibilities for saving critical materials.

#### Need 3,000,000 tons of scrap a month

The stove manufacturers were urged to turn in all available iron and steel scrap, as the steel industry needs 3,000,000 tons of scrap a month to hold present high levels of production. Holbrook pointed out that the consumer durable goods industries is one of the largest users of steel, with the stove industry alone

using 800,000 tons of carbon steel a year.

In closing, Holbrook urged his audience to lend full support to the government defense program by (1) finding and using substitute materials, (2) producing new types of products not requiring critical materials, and (3) getting into defense contract and sub-contract work.

#### Range manufacturers need to "sell" the homeowners

George T. Mortland, appliance buyer, R. H. Macy & Company, New York City, addressed the Gas and Combination Range Division on the

subject of "Specialized Gas Range Selling at the Retail Level."

Mortland said there is no great surge to turn in old ranges for new ranges because the manufacturers and dealers are not telling the homeowners why they should have a new range. "You must go out and persuade them they need a new beautiful range" just as much as they need a new car or automatic washing machine, said the speaker. He added that the automotive and home laundry equipment industries were doing an excellent job of pointing out to the consumer the automatic features of their new products, and that the stove industry must do the same.

#### RECOVER MILLION POUNDS OF SCRAP AT YALE & TOWNE

More than 1,000,000 pounds of non-production scrap metal was salvaged for the country's defense production and returned to steel mills by The Yale & Towne Mfg. Co. during 1951, it was revealed by Otto G. Schwenk, vice president in charge of production. This is in addition to the thousands of tons of the usual "process scrap" consisting of chips and turnings.

Non-production metal scrap recovered by Yale & Towne consisted mainly of worn out or obsolete tools, dies, jigs, fixtures, machinery, sinks, metal partitions, and cast iron pipes.

#### NASH-KELVINATOR JOINS PORCELAIN ENAMEL INSTITUTE

Nash-Kelvinator Corporation, Detroit, has joined the Porcelain Enamel Institute, according to an announcement from Institute headquarters. The chief contact for Nash-Kelvinator in Institute activities will be J. W. Lelivelt, works manager of the company's Grand Rapids plant.

Highlights in Kelvinator's record of continuous growth are the acquisition of Leonard Refrigerator Company in 1926, and merger with Nash Motors Company in 1936.

PEI is the national association of porcelain enamelers, manufacturers of porcelain enameled products, and producers of porcelain enameling equipment and supplies.

#### ICHAM Board of Trustees for 1952

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Kresky Manufacturing Co., Inc.  
Petaluma, California

**Managing Director:** Samuel Dunckel, Institute of Cooking and Heating  
Appliance Manufacturers, Washington, D. C.

## ADS OUT—

urer and head of the accounting department of Erwin, Wasey & Co., Inc., advertising agency.

Announcing the appointment, President Castner cited "the increasing diversification of our industry's products, our annual National Home Laundry Conference which is unequalled in household appliance promotion and our affiliation with the National Sanitation Foundation at the University of Michigan in its revolutionary technique for gauging washing results" as giving "some indication of how the responsibilities faced by our Association have grown tremendously since the days before World War II. In addition, we face a continuance of times during which it will be necessary to render greater service to all our members."

## HELEN KIRTLAND HEADS HOTPOINT INSTITUTE

In a realignment of its home service facilities to broaden programs for retailers, distributors and consumers, Hotpoint, Inc., Chicago, has named Miss Helen Kirtland manager of the Hotpoint Institute.

Miss Kirtland formerly was associate editor of household equipment at *McCalls' Magazine*, and has had broad experience in the appliance and related industries dating back to 1932. Edward R. Taylor, vice president, said in announcing the move.

## AGA NAMES SITES FOR '52 AND '53 CONVENTIONS

The American Gas Association has announced that its 1952 convention will be held in Atlantic City the week of October 27, and the 1953 convention will be held in St. Louis the week of October 26.

## HOME LAUNDRY MFRS. ANNUAL MEETING IN CHICAGO, JANUARY 5

The annual meeting of the American Home Laundry Manufacturers Association will be held in Chicago, January 5, at the Morrison Hotel, it was announced by AHLMA. The meeting immediately precedes the opening of the Winter Homefurnishings Market, also held in Chicago.

## YORK NAMES VICE PRES. AND SECRETARY-TREASURER

Stewart E. Lauer, president of York Corporation, has announced the election of Donald M. Magor to the office of vice president and controller, and William F. Lynne as secretary and treasurer.

## AL SHERMAN, GLOBE RESEARCH VICE PRESIDENT, RETIRES

Al Sherman, vice president in charge of research and development, Globe American Corporation, retired in December.

The son of a Detroit hardware merchant, Sherman came up from a teamster in a stove factory to high recognition within the industry. His father, while in the hardware business, developed a "vapor burner", and in 1895 started the Detroit Vapor Stove Company.

Upon the death of his father, Sherman took over as president of Detroit Vapor until it was sold to Borg-Warner Corporation. In 1939, he joined the Globe American organization.

## MOORE NAMED CHIEF ENGINEER FOR NESCO

The appointment of Chester H. Moore as chief engineer of the housewares division of Nesco, Inc., was announced by Mel E. Mauer, vice president in charge of manufacturing and engineering.

Moore will be in charge of engineering on all housewares products, including galvanized ware, litho-

graphed ware and dairy ware. He formerly was chief product engineer for National Can Company. Previously, he was project superintendent for Rheem Manufacturing Company.

## AHLMA NAMES REINECKE EXECUTIVE SECRETARY

The appointment of John J. Reinecke as executive secretary of the



American Home Laundry Manufacturers Association, with headquarters in Chicago, has been announced by George P. Castner, AHLMA president and general manager of Beam Manufacturing Company, Webster City, Iowa.

Reinecke had served as executive secretary of the Wood Office Furniture Institute, Washington, D. C., since 1942. For a number of years before that, he was variously engaged in advertising, marketing and management activities in New York City, including five years as assistant treas-

## FIFTH NATIONAL HOME LAUNDRY CONFERENCE

Still ringing in the ears of American Home Laundry Manufacturers Association members is the praise given them for staging an "epochal" conference in New York City in November.

It was the fifth in a series, and was marked by attendance exceeding 400, predominantly home economics authorities from the fields of education, publishing, government and utilities.

Remarkable, according to those who took part, was the fact that the

*Right: Honoring Miss Katharine A. Fisher, director of Good Housekeeping Institute, Geo. P. Castner, AHLMA president, presents her a "Testimonial of Appreciation" on behalf of the industry. The testimonial saluted Miss Fisher for her long record of service to the American homemaker.*



Association, credited with making 95% of the household washers, dryers and ironers produced in this

country, had, as a featured speaker, a representative of the American Institute of Laundering, the commercial

*Left: Howell G. Evans, vice president, Hamilton Mfg. Co., presents a gift to Mrs. Elizabeth Sweeney Herbert, household appliance editor of McCall's, for her summarizing of the Conference proceedings. Mrs. Herbert was a founder of the Conferences, now sponsored by AHLMA. Mr. Evans is treasurer of the Association.*

laundry industry's trade organization, and that the much-debated subject of synthetic detergents was brought into the open and given full pro and con discussion.

One observer from a related field, attending his first National Home Laundry Conference, commented:

"It was an enlightening experience to see so many men and women, operating in diverse and often competitive fields, working toward the common end of supplying the housewife with better homemaking equipment. The frankness of the speakers on these topics and the down-to-earth atmosphere of the Conference in general makes us look forward with interest to future sessions of this kind."

## TUTTLE & KIFT COMPLETES \$245,000 EXPANSION PROGRAM

A \$245,000 plant expansion program has been completed by Tuttle & Kift, Inc., W. R. Tuttle, president, has announced. The firm, a subsidiary of Ferro Corporation, manufactures surface cooking units for electric

ranges and a wide variety of special electric elements.

Included in the expansion is a new building with 28,000 square feet of floor space and a modern home economics laboratory which is said to

be the first ever built by a supplier of surface cooking units. According to Tuttle, the laboratory will provide complete cooking facilities for "kitchen-testing" the firm's line of surface cooking units.

"In this laboratory, our home economics staff will compile cooking data for the range manufacturers' instruction books, work out sales demonstrations for dealers, do the kind of actual cooking tests that will help housewives to obtain the fullest measure of satisfaction from their electric ranges," Tuttle added. "In today's competitive market, this service is of extreme importance to our customers."

Estimated 1951 sales of T&K were \$8 million, it was reported. This represents a 100% increase over the firm's 1946 sales.





H. F. Bond, vice president in charge of sales, and Florence Evert, home economics director of Tuttle & Kift, Inc., work out a range demonstration in a corner of the firm's new home economics laboratory. Laboratory walls are of porcelain enamel steel-faced hardboard.

## HARRISON, CHAMBERS SHOW BUILT-IN RANGE KITCHEN UNITS

Cooperative promotion between a steel kitchen cabinet manufacturer and a producer of a leading line of built-in gas cooking equipment was announced recently.

The cabinet maker, Harrison Steel Cabinet Co., Chicago, and the gas range manufacturer, Chambers Corporation, Shelbyville, Indiana, first

displayed their products together at a recent home show held at Chicago's Navy Pier.

At the show, a Harrison kitchen, produced in a pastel pink motif, was exhibited, complete with the new Chambers counter-level "in-a-wall" oven and "in-a-top" drop-in three-burner unit. The display was said



finish JANUARY • 1952

to have attracted more than 100,000 persons to the Harrison booth.

Shown in the photo examining Chambers "in-a-wall" oven are E. F. Mullen (left), general manager of Chambers' Illinois distributing organization, and Chester Cain, executive vice president of Harrison.

## PRESSED METAL INSTITUTE NAMES DISTRICT CHAIRMEN

The Pressed Metal Institute, Cleveland, Ohio, has announced district chairmen for 1952 as follows:

New England — Herbert D. Berry, Thomas Smith Company, Worcester, Mass.

Philadelphia — C. Glenwood Rose, Judson & Rose, Inc., Philadelphia.

Western New York — K. L. Delavern, Presque Isle Metal Products Company, Erie, Pennsylvania.

Northeastern Ohio — William J. Primrose, Jr., The Dickey-Grabler Company, Cleveland.

Toledo — George E. Lober, Superior Spinning & Stamping Company, Toledo.

Michigan — W. K. Lomason, Douglas & Lomason Company, Detroit.

Chicago — C. C. Caditz, Northern Metal Products Company, Chicago.

Milwaukee — Earl D. Miller, Milwaukee Stamping Company, Milwaukee.

## WALTER SCOTT, FORMER YS&T OFFICIAL, DIES

Walter E. Scott, former manager of flat-rolled products sales for The Youngstown Sheet and Tube Co., died recently of a heart attack. An employee of YS&T for 43 years, he had retired December 31, 1949.

Scott joined the company in September, 1906, as a clerk in the mailroom. He was advanced to the pipe sales department, transferred to the rod and wire, and in 1914 joined the sheet sales department. In 1926, he was named manager of sheet and plate sales.

## HELD REELECTED CHAIRMAN OF PLUMBING FIXTURE ASSN.

At their annual meeting at the Drake Hotel, Chicago, November 30,

# YOU READ ABOUT IT!

**NOW FERRO JOINS SOLAR FOR MASS-PRODUCTION  
OF NEW COATING TO SAVE CRITICAL METALS**

## **New fields open to Porcelain Enamelters**

Ferro announces it has been granted exclusive license to manufacture and distribute the sensational new, high temperature resistant ceramic coating recently developed by Solar Aircraft Company, of San Diego, California.

Used now to save high-alloy metals in jet engine construction, this radical new ceramic coating will soon be available for burners and oven parts on household stoves and ranges . . . furnaces of all types . . . engine parts on trucks, autos, and commercial aircraft . . . hundreds of other applications involving both high temperatures and chemical corrosion.

Where can you use it to cut costs . . . to produce a better product . . . to save critical metals?



JANUARY • 1952 finish



**FERRO CORPORATION**  
*Porcelain Enamel Division*  
 4150 EAST 56th STREET • CLEVELAND 5, OHIO

the Enamelled Cast Iron Plumbing Fixtures Association elected officers for 1952 as follows:

Chairman, Henry J. Held, vice president, Universal-Rundle Corp., Milwaukee; vice chairman, O. A. Kroos, executive vice president, Kohler Company, Kohler, Wisconsin; and treasurer, David J. Crane, vice president, Eljer Company, Ford City, Pennsylvania.

With the approval of Association members, the chairman appointed the following committees:

Executive Committee—consisting of Association officers and W. G. Moore, president, Humphreys Manufacturing Co., Mansfield, Ohio.

Standards Committee—chairman, A.G. Zibell, Kohler; M. A. Dantzler, Universal-Rundle; Louis Probst, Eljer; and W. G. Moore, Humphreys.

Advertising Committee—R. C. Angelbeck, Kohler; A. E. Thiesfeldt, Eljer; and I. A. Eubanks, Universal-Rundle.

Members of the Association ex-



**Vacuum cleaner group**—elects Walter Dietz, left, president of Electrolux Corporation, as 1952 president of the Vacuum Cleaner Manufacturers Association. Dietz is shown receiving the congratulations of his predecessor, George H. Scott, head of Scott & Fetzer Company. W. E. Slabaugh, Jr., Westinghouse, was elected vice president of VCMA, and C. G. Frantz, president of Apex, is beginning his 33rd year as the Association's secretary-treasurer.

pressed the belief that, subject to uncertainties in government controls, there will be a sufficient supply of enameled cast iron plumbing fixtures for installation in 1952.

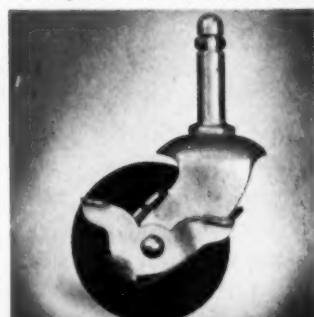
#### U. OF I. CERAMIC STUDENTS TO PUBLISH YEARBOOK

Plans for the publication of the Illini Ceramist of 1952, an annual



▲ 2109-11 1½" Pintle Type Caster with hard rubber composition wheel.

▼ 2114-62PH 2½" Pintle Type Caster with plastic wheel and cam brake.



▼ B2614-62P 2½" Swivel Type Caster with strong plastic wheel.



#### NAGEL-CHASE V-BELT PULLEYS FOR BELT DRIVEN APPLIANCES

Nagel-Chase V-Belt Pulleys are made from spot-welded pressed steel and designed so that the pulley cannot come loose from the hub. They are ideally suited for operation with fractional horse-power motors in wringer or automatic type washers or dryers. Use Nagel-Chase Pulleys for all your belt driven appliances.

Write for complete information today!

**THE NAGEL-CHASE MANUFACTURING COMPANY**  
2811 N. Ashland Avenue, Chicago 13, Ill.  
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

yearbook of the Student Branch of the American Ceramic Society at the University of Illinois, were formulated at a meeting on November 27. It was indicated that the book will be published in time for distribution at the annual meeting of the American Ceramic Society in April.

#### 50TH MEMBER JOINS GAMA WATER HEATER DIVISION

The D. W. Whitehead Corporation, Trenton, New Jersey, joined the GAMA Water Heater Division as its fiftieth member, it was announced by the Gas Appliance Manufacturers Association.

#### MACDERMID WESTERN NAMES TAYLOR RESEARCH DIRECTOR

Dr. A. Lloyd Taylor has been appointed director of research in the



research laboratories of MacDermid Western, Inc., Ferndale, Michigan, where his work will be in the field of industrial detergents, chiefly for use in the metals field.

He was formerly director of the chemistry department of Pease Laboratories, New York City; director of research for Oakite Products, Inc.; and vice president in charge of research and development, H. L. Shaw and Sons, Inc. More recently, he held the position of research supervisor for Wyandotte Chemicals Corp.

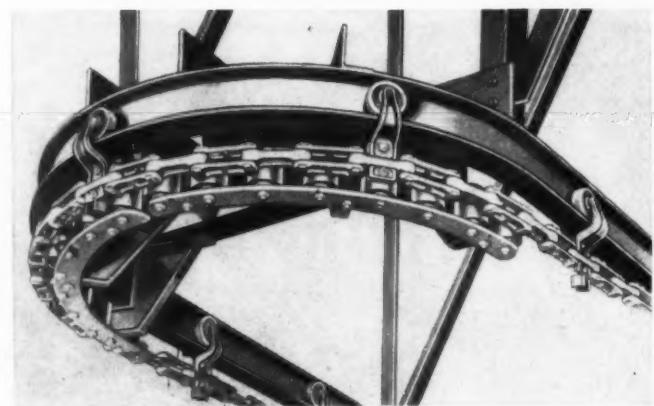
MacDermid Western is a subsidiary of MacDermid Inc., of Waterbury, Connecticut, and will manufacture the complete line of MacDermid products for metal cleaning and electroplating.

## The FIRST Roller Coaster

Originally known as the Switchback, the first Roller Coaster was built in Paris in 1816. The crude originals were soon discontinued because of numerous fatalities. However, in 1880 they were again introduced in Paris and the United States simultaneously—and have since been enjoyed by millions.



#### JERVIS B. WEBB COMPANY was the FIRST to develop Horizontal Roller Curve Assemblies



Typical Webb Horizontal Roller Curve Assembly

The Webb Roller Curve is the most economical, serviceable and satisfactory unit for carrying an overhead conveyor chain around a horizontal curve. Chain and trolleys are held in the correct vertical position by ball bearing rollers which reduce both friction and wear to a minimum. Roller Curves are made in various radii and arcs for varying needs. Rollers are mounted between two segment bars.

#### The Working Part Of A Roller Curve Is The Roller



Rollers used in Webb Roller Curves are specially designed and built for the service. Available for two types of lubrication . . . oil hole in cover and grease fitting in drilled center pin. In either case, the Roller Curve is assembled so as to make lubrication easy. The design of the Roller Curve is such that the rollers are readily replaceable without dismantling.

CONVEYOR ENGINEERS AND MANUFACTURERS

**JERVIS B. WEBB COMPANY**

8913 ALPINE AVE. OFFICES IN  
DETROIT 4, MICH. PRINCIPAL CITIES

FACTORIES IN DETROIT . . . LOS ANGELES . . . HAMILTON, ONT.

An advertisement for Jervis B. Webb Company. The top half features the company name in a bold, serif font inside a stylized hexagonal logo. Below the name, the address '8913 Alpine Ave., Detroit 4, Mich.' is given. The bottom half of the ad contains the text 'CONVEYOR ENGINEERS AND MANUFACTURERS' and 'FACTORIES IN DETROIT . . . LOS ANGELES . . . HAMILTON, ONT.' in a smaller font.

## NORGE MEN SET FAST PACE AS PRELUDE TO '52 SALES

Since November 29, the Norge Division of Borg-Warner Corporation, Chicago, has been holding a series of fast-moving conferences and group meetings at the company's headquarters in The Merchandise Mart which are being attended by all of their distributor principals from the 48 states and Hawaii.

H. L. Clary, vice president in charge of sales, stated that "Some

idea of the activity of our current conferences can be measured by the fact that two or three of our visiting Norge men are purchasing entire trainloads of the 1952 line for their first-quarter requirements only."

In order to thoroughly cover more ground and to extend a more personal as well as cordial welcome, Norge has been bringing to Chicago the principals of eight or ten distributors at a time who are devoting two days inspecting and placing orders for the 1952 Norge line.

## DRYER SALES CONTINUE RISE, WITH WASHERS, IRONERS DOWN

Sales of automatic tumbler dryers in October aggregated 59,299 units, up 35.5% from 43,752 in the preceding month, and a gain of 105.3% over 28,382 units in October, 1950, according to industry-wide figures announced by the American Home Laundry Manufacturers Association.

Dryer sales in September aggregated 43,752 units, up 8.9% from 40,191 in August, and an increase of 39.3% over 31,399 in September, 1950.

Sales of standard-size household washers in October totalled 297,210 units, compared to 313,756 in September, a loss of 5.3%. The October total compared to 439,924 units in the corresponding month of 1950.

Washers sold in September totalled 313,746 units, compared to 239,081 in August, an increase of 31.2%. Sales in September, 1950, totalled 424,043 units.

Ironer sales amounted to 29,800 units in October, 62.8% more than 18,300 in September. Sales were 47,500 in October a year ago.

Sales of ironers in September totalled 18,300, up 6.4% over 17,200 units in the preceding month. Sales in September, 1950, totalled 41,400.

## CRIDER RESIGNS FROM APPLIANCE MFG. CO.

K. J. Crider, vice president in charge of manufacturing, Appliance Manufacturing Company, Alliance, Ohio, resigned in December. He had headed manufacturing operations for the producers of Duchess washing machines for the past 15 years. Crider's new plans were not announced.

## CARROLL NAMED MANAGER OF HOTPOINT PLANNING

John F. Carroll has been promoted to manager of production planning, Hotpoint, Inc., Edward R. Taylor, vice president, announced. Carroll has the responsibility for adapting engineering, pricing, and introduction of products to meet competitive marketing needs, in keeping with sales programs on the company's electric appliances for kitchen and home laundries, said Taylor.

**Robertshaw**  
MODEL B-10

**MODEL B-10  
DIRECT ACTING TYPE**  
BREAKS CIRCUIT ON RISE  
OF TEMPERATURE. Particularly suitable for sterilizers, steam tables, warming tables, ovens, coffee urns, deep-fat fryers.  
Write for Catalog B-10

**MODEL B-20  
REVERSE ACTING TYPE**  
MAKES CIRCUIT ON RISE  
OF TEMPERATURE. Particularly suitable for warning lights or signals on over-temperature for application to fire signals, signal over-heating, motor generators.

In home and industry...EVERYTHING'S UNDER CONTROL

**Robertshaw**  
THERMOSTAT DIVISION  
ROBERTSHAW-FULTON CONTROLS COMPANY  
YOUNGWOOD, PENNSYLVANIA

## PLANT MAINTENANCE SHOW PHILADELPHIA, JAN. 14-17

More than 6,000 machines and products useful in various aspects of industrial maintenance, said to be the greatest such display ever assembled, will be on exhibit at the Plant Maintenance Show, to be held at Convention Hall, Philadelphia, January 14-17, it was announced by Clapp & Poliak, Inc., the exposition management.

Some 14,000 executives from all parts of the country are expected to attend the show. Advance registrations indicate that more than 30 foreign countries will be represented among the visitors.

Manly Fleischmann, administrator, Defense Production Administration, will discuss "Plant Maintenance in National Defense" at the annual banquet.

Advance registration cards may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

## N. W. CHEMICAL MIDDLE ATLANTIC STATES REP.

H. J. McCracken, president of Northwest Chemical Company, Detroit, has announced the appointment of Johnson Sales Company, Montclair, New Jersey, as Northwest's middle Atlantic states representative.

With a background of a chemical degree from Johns Hopkins University and special courses in physical chemistry and electroplating at New York University, Howard F. Johnson, head of Johnson Sales, has had experience in the chemical, smelting and refining industries, holding executive positions with such companies as American Smelting & Refining, Nichols Copper, and Lotte Chemical.

## NEW CLOTHES DRYER

### USES INFRA-RED HEAT RAYS

A clothes dryer that dries by infrared heat and without tumbling has been introduced by Radiant Glass Appliance Corp., Norwich, N. Y.

The appliance, called the Dri-Master, is a chest-type steel cabinet with two radiant glass panels in the floor. From 8 to 10 pounds of clothes

can be hung on wire hangers in the cabinet at one time for drying.

The company points out, however, that the new appliance is not a speed dryer. Drying time is from one to two and one-half hours, depending on the weight of the items.

## MERCHANDISE MART OFFICE MOVED TO FIFTH FLOOR

The office of the building of The Merchandise Mart, Chicago, has been moved to temporary quarters in Room 506, Wallace O. Ollman, gen-

eral manager, announced. It was indicated that the Mart office would be maintained on the fifth floor for seven or eight months.

## EDELMUTH NAMED V. P. OF GRAND APPLIANCES

David L. Edelmuth, former vice president in charge of sales, Artkraft Mfg. Corp., has been appointed vice president and general manager of Grand Home Appliances Co., it was announced by James Mitchell, president of Grand Industries, Inc.

**Machined**

**FORGINGS**

**CASTINGS**

**EXTRUSIONS**

*to customer specifications*

**For Defense Production or  
Essential Civilian Requirements**

Whenever your components are to be produced from brass forgings, castings or extrusions, Detroit Brass is your answer.

Whenever brass or bronze metal is specified you are assured quick cooperation and prompt production. Where close tolerances are demanded, where familiarity with government specifications is desirable, call in Detroit Brass—get the advantages of the company's fifty years' growth in brass experience.

**DETROIT BRASS & MALLEABLE WORKS**  
SPECIALTIES DIVISION  
DETROIT 9, MICHIGAN

**AT YOUR SERVICE IN THE NATIONAL EMERGENCY**



**Finish candid camera photos**—of members attending the Midwest Enameler's Club meeting held December 1 at the LaSalle Hotel, Chicago. Papers presented at the meeting included "Fishescale Susceptibility of Enamel-Steel Systems," by Donald C. Bowman, of Chicago Vitreous Enamel Product Co., and "One Coat White Titanium Enamel Direct to Non-Premium Steel," by Paul S. Cecil, of The Strong Manufacturing Company.

**If** YOU DON'T SEE IT HERE ----  
IT'S PROBABLY IN OUR CATALOG



**If** IT'S NOT IN OUR CATALOG ---  
WE'LL DESIGN IT FOR YOU

THE FAHRALLOY COMPANY

150th & Lexington Ave.

Harvey, Ill.

## FOR SALE USED PAINT SPRAY SYSTEM

Completely conveyorized system for spray painting, baking, washing and drying.

Excellent condition . . . used less than 3 years.

Oven floor, 15' x 36'.

Heat control and recording instruments.

Spray painting room, 18' x 36'; water curtain; air circulating and heating system.

Parts washer, 30' long; separate dryer, gas fired with control and recording instruments.

This plant is now set up. It includes everything necessary—motors, blowers, fans, pumps, trolley type conveyors etc.

Write for photographs and details.

Box No. 152, Finish, 360 N. Michigan Ave.  
Chicago 1, Illinois

**WEST COAST ENAMELERS  
ELECT OFFICERS, DISCUSS  
COATINGS FOR JET ENGINES**

Some 50 members of the Pacific Coast Enameler held their last 1951 meeting on Friday evening, December 14. Principle business of the meeting was election of officers for the forthcoming year. Winners on the ballot were Roy Hastings, of Gaffers & Sattler Company, President; Hyman Leggett, of California Metal Enameling Company, Vice President; Frank Fernholz, of Fernholz Machinery Company, Secretary and Treasurer, and Leo Madigan, of Western Stove Company, Assistant Secretary and Treasurer.

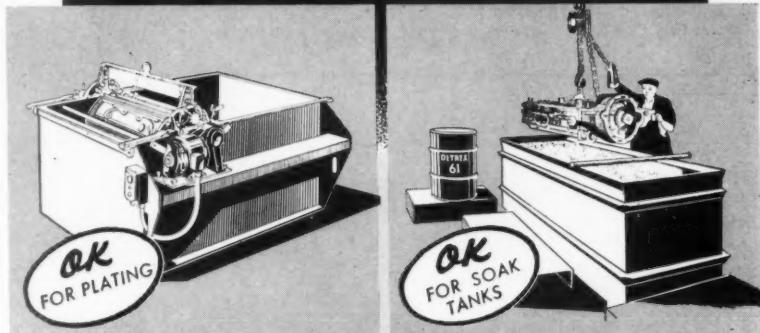
The meeting was climaxed by an interesting and informative speech by John V. Long, director of research, Solar Aircraft Company. Long described the recently announced "Solar-amic" process (*October, 1951, finish*) for ceramic coating of the super alloys used in jet engine construction, and emphasized the part that ceramics must play if jet engine needs for military purposes are fulfilled.

"Current plans call for 218,000 jet engines by the end of 1952," Long said. "At the current level of supply, this number of engines calls for more of the super alloys than are now available. The only visible answer is the use of ceramic coated lower alloys, such as No. 321 stainless steel."

Long pointed out that the enameling industry must furnish the facilities for much of this work. "There are three structural possibilities for high-temperataure jet engine parts," he said. "First, there is the possibility of using full ceramic bodies to replace the super alloys, however full ceramic bodies do not seem practical at this time. Secondly, and of better promise, are the "cermets," composed of a mixture of ceramics and metals. In this conjunction, we have noted that when a cermet contains a high percentage of titanium carbide, it attains the highest thermal conductivity of any known material.

"Third, ceramic coatings applied on less strategic alloys offer the most logical solution at this time. Considerable progress has been made in

**DETREX 61**  
*for*  
**Tough Cleaning Jobs**



Electroplaters like Detrex 61 for cleaning prior to barrel plating because of its high wetting and penetrating powers and because it is free rinsing.

Maintenance men prefer Detrex 61, the ideal heavy-duty cleaner, for the removal of stubborn road dirt, oil and grease from motor blocks, etc.

Yes, you'll find Detrex 61 a versatile alkaline cleaner—perfect for soak tank use, and for cleaning before barrel plating, prior to phosphate coating, and before vitreous enameling. It quickly removes oil and grease from all ferrous parts.

In one plant, for example, cleaning costs have been cut in half, because "61" costs less and is used at lower concentration. But even more important, a better cleaning job is obtained.

You, too, can cash in by using a Detrex compound fitted to your job. Write today.

112A

**DETREX** *Corporation*  
DETREX CORPORATION  
BOX 501, DETROIT 32, MICH.

this direction, and techniques and materials have been researched."

These frits are not for use on low alloys, but give best results when

applied on the 300, 400, and 500 series of stainless steels, and on other alloys containing at least 5 per cent of chromium.

## SHORTAGE OF NICKEL DELAYS NEW STEEL DEVELOPMENT

In the December 1951 issue, *Finish* made the first industrial trade publication announcement of "New Ferro Corporation-Republic Steel Process for Cover Coat Enamel Direct to Steel." Described was a new

process which permits application of one coat titania-opacified enamel directly to steel, eliminating the ground coat.

In an editorial conference with sales executives of Republic Steel, it

has since been learned that there will be a delay in the production of the sheet steel which they have developed for this purpose. According to Burton Longwell, assistant manager of sales, Sheet and Strip Division, at Republic, the company is equipped to produce the special sheet steel which has been developed by them, but the new development requires the use of nickel anodes.

If nickel anodes were immediately available, it was stated that it would probably be the second quarter of 1952 before the sheet would be commercially available, but, as is commonly known, nickel anodes are not immediately available.

In describing the situation, to a *Finish* reporter, Mr. Longwell said, "Ferro and ourselves have been working on this new sheet for the past three years at least and we have installed, at our Cleveland plant, a line on which this sheet will be produced. However, since nickel anodes are required, we cannot possibly get into the production of this particular product until nickel is again freely obtainable. When that will be is anybody's guess, but it looks at least a year away and possibly longer."

## TUTTLE NAMED FERRO DIRECTOR

William R. Tuttle, president of Tuttle & Kift, Inc., Chicago, has been



elected to the board of directors of Ferro Corporation to fill a vacancy left by the death of Don C. Wheaton.

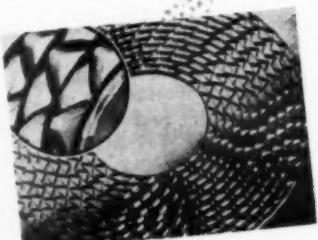
Tuttle, who has been president of T&K since 1937, is an electrical engineer and the holder of many patents on electrical equipment.

# Why pay for IRON SPOTS?

"Prevention is cheaper"  
with the  
**FRANTZ FERRO FILTER**



Enclosed pipe-line type  
FerroFilter sizes range  
from 1" to 3" IPS.



A FerroFilter grid. Magnified inset shows collected particles on grid edges.

On clean, iron-free enamel slips depend the sparkling enamel finishes that are so necessary for your finished products. Failure to eliminate iron contamination invariably costs you money—results in product rejections or lowering of grade.

### YOU HAVE A CHOICE!

The electromagnetic pipe-line separator shown above fits into your dip tank circulating system and your liquid transfer system to supply you with the lowest cost finish insurance you can buy.

The Frantz FerroFilter offers the maximum in design simplicity, convenience, and real dollar saving economy that our experience as leading magnetic separator manufacturers has enabled us to put into it. The quality is backed by an unchallenged reputation and high performance records in leading plants all over the country.

Prove it for yourself! Have spoilage costs drop, production increase and rejects rare as a January heatwave—with the Frantz Electromagnetic Ferro-Filter.

Gravity type FerroFilters are available where a closed system is not required.

For further information  
send for Bulletin No. 54

**S. G. FRANTZ CO., INC.**

P.O. Box 1138

Trenton 6, New Jersey

1204

## HEADS G-E SILICONE

### CUSTOMER SERVICE

Jerome T. Coe, of General Electric's Chemical Division, has been appointed customer service supervisor for silicone products with offices in Waterford, N. Y., it was announced by Wallace W. Ryall, sales administration and control manager for the Division's chemical materials department.

## DETREX NAMES WEBB SALES MANAGER OF ALKALI PRODUCTS

W. H. Webb has been appointed sales manager of alkali products for Detrex Corporation, Detroit, according to an announcement by A. O. Thalacker, vice president and general manager.

In the past ten years, Webb has advanced through the positions of assistant manager of alkali division, assistant national accounts manager, and central region manager. He has had wide experience in the plating and metal cleaning fields.

As alkali products sales manager, Webb will work closely with specialized field personnel concentrating on serving the consumers of alkaline and emulsion cleaning materials.

## PENNSALT REORGANIZES SALES DIVISION

Pennsylvania Salt Manufacturing Company, Philadelphia, has completed steps in a new organization of its sales division, William P. Drake, vice president in charge of sales, announced.

The line organization of the sales division is headed by Russell S. Roeller as general manager. Reporting to him are Albert H. Clem as field sales manager, Edwin S. Garverich as manager of technical services, and eight department sales managers. Clem will be responsible for all district sales offices.

The planning organization for the sales division is headed by Arthur G. Tunstall, Jr., as manager of marketing. Reporting to him are Paul C. Hurley, manager of sales promotion; Franklin A. Lucard, heading the new department of sales development, and

Malcolm J. Harkins in a new position as manager of sales control.

George D. Grogan, formerly an assistant to the vice president in charge of sales, was named sales manager of industrial chemicals, replacing Clem. Joseph J. Duffy, Jr., was named sales manager of the Fos products and industrial cleaners department.

Retaining his present position under the new organization is H. F. McIntyre, manager of the company's maintenance chemicals department.

## PENN ELECTRIC SWITCH

### NAME CHANGED

The firm name of Penn Electric Switch Company, Goshen, Indiana, has been officially changed to Penn Controls, Inc., according to Albert Penn, president.

Penn Controls manufactures automatic controls for heating, refrigeration, air conditioning, gas appliances, engines, pumps and air compressors.

*Our plants are part of  
your production line*

OUR  
APPLICATION  
TECHNICIANS ARE  
AVAILABLE TO  
HELP STREAMLINE YOUR  
INSULATION METHODS

Ask your Fiberglas representative  
about this service

The universal appliance insulation



FIBERGLAS INSULATION MADE BY  
OWENS CORNING  
**FIBERGLAS**  
insulated  
OWENS CORNING FIBERGLAS CORPORATION, TOLEDO 1, OHIO

\*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens Corning Fiberglas Corporation for products made of or with fibers of glass.

## CROSLEY CONSTRUCTING \$5.5 MILLION DEFENSE PLANT



Construction of a \$5,500,000 defense production plant at Evendale (Cincinnati), Ohio, for the Crosley Division of Avco Mfg. Corp. was begun December 1.

John W. Craig, Avco vice president and Crosley general manager, declared that production at the new plant, which eventually will employ 2,000 persons, would begin "as early



### In Pipe and Tube Welding YODER SCORES AGAIN!

Since the introduction of the Yoder electric resistance weld Tube Mills in 1939, nothing quite so important has happened as the new **Yoder four-in-one Welding Transformer**. Instead of the conventional single rotating transformer, it embodies four smaller transformers surrounding a common core, making a unit of unique compactness and strength which insures longer life and fewer interruptions for servicing. Equally important — impedance is

reduced, resulting in higher electrical efficiency. Compared with the present Yoder welder, production gains up to 20% are recorded. Compared with other tube welders, the gain may be as high as 50% to 60%. All Yoder tube mills henceforth will be equipped with this transformer. It is also available for replacement of welders in other tube mills. *Literature, recommendations and estimates for the asking.*

THE YODER COMPANY • 5559 Walworth Ave., Cleveland 2, Ohio

Complete Production Lines

- \* COLD-ROLL-FORMING and auxiliary machinery
- \* GANG SPLITTING LINES for Coils and Sheets
- \* PIPE and TUBE MILLS — cold forming and welding



as possible" in 1952 to produce vital fire-control equipment for the Air Force and electronic equipment for the Navy.

The one-story building will be 720 feet long and 360 feet wide, with 360,000 square feet of floor space including balconies. It is hoped that the plant will be partly completed and that limited production can begin by next June, said Craig.

### CROSLEY NAMES MGR. OF AIR CONDITIONING SALES

The appointment of Joseph L. Armstrong as manager of the air conditioning sales section of Crosley Division, Avco Manufacturing Corp., was announced by W. A. Bles, Avco vice president and Crosley general sales manager.

The announcement follows a recent report that arrangements have been completed under which Fedders-Quigan Corp., Buffalo, will manufacture room air conditioning units to Crosley design and specifications.

Armstrong's previous industry connections include those of field sales manager, Bendix Home Appliances, Inc., and general sales manager, Schaefer, Inc., manufacturers of low temperature products.

### DETROIT BRASS ENLARGES WEST COAST FACILITIES

Detroit Brass & Malleable Works has announced plans for opening in mid-January of a new large modern warehouse on Forty-Fourth Street, between Soto Street and Boyle Avenue, Los Angeles.

R. L. O'Brien, company president, reports that the new warehouse will provide more than 15,000 square feet of floor space and will nearly triple the size of the company's Los Angeles warehouse, originally opened in January, 1949.

Resident company officials in charge will be W. A. Longobardi, Pacific Coast manager, and A. A. Jacquot, western district sales engineer. Territory to be served will include California, Washington, Oregon, Nevada, New Mexico, Arizona and Texas as far west as El Paso.

## ALUMINUM AND COPPER TO CONTROL HOME LAUNDRY EQUIPMENT PRODUCTION

Steel will not be a controlling factor in the production of household washers, dryers and ironers in the opening quarter of 1952, according to George P. Castner, president of the American Home Laundry Manufacturers' Association and general manager of Beam Manufacturing Company, Webster City, Iowa.

"Steel allocations for the first quarter are close to the 58% of base set for our industry for the final quarter of 1951," Mr. Castner said. "With much greater restrictions on aluminum and copper for the first quarter, however, it will take quite a bit of juggling by everyone to match up those two metals . . ."

In discussing the steel situation, Mr. Castner pointed out that "although we are not going to be able to get desired mill shipments, we will be able to obtain adequate supplies from conversion programs, warehouses and the gray market." He added that the situation on steel, as of early December, had "loosened up substantially, with plenty floating around in the gray market, much more than at the end of September. With greatly increased production of steel coming through, the critical position of copper and aluminum will control our industry's whole manufacturing situation."

Mr. Castner emphasized the fact that the Association's members are "doing the best with what they've got" by utilizing alternate materials, an example being plastics instead of aluminum in some applications.

Discussing the 1952 outlook in the home laundry appliance field for the months after the first quarter, Mr. Castner said: "As far as copper and aluminum are concerned we hope that the NPA will not reduce them further than they did for the first quarter. We don't know, of course, what NPA will impose for the remainder of 1952. Assuming that it doesn't go too far on copper and aluminum, we can forecast that we will struggle along with production in the second and subsequent quarters amounting to

about 50% of the base period."

In January, 1951, the Association president recommended that member companies should plan to adjust their factory production to 50% and supplement civilian output with defense supply contracts.

### SCHIRMER HEADS INDUSTRIAL TRUCK ASSOCIATION FOR 1952

Walter E. Schirmer, vice president, The Clark Equipment Company, was elected president of the Industrial

Truck Association at the group's annual meeting held December 11, at Hotel Statler, New York City.

Prentice Borden, general manager, The Crescent Truck Company, was elected vice president of the Association. William Van C. Brandt will continue to serve as ITA managing director.

### INDUSTRIAL FINISHING SHOW IN CHICAGO, JUNE 16-20

The 1952 Industrial Finishing Exposition will be held in Chicago, June 16 through 20, at the International Amphitheatre, according to an announcement by the American

*a labor Saving, Money Saving Idea!*

# CONTINUOUS STRIPPING

OF HOOKS, HANGERS, with REJECTS



# KLEM Strip-Aid

Patent applied for

**Y**ES for a cleaner, better finish, strip hooks and hangers of paint and enamel before reusing. Do it at a saving of labor and material. Do it as an operation on your regular paint line. Get the facts of Klem's new additive Strip-Aid that makes continuous stripping possible by cutting time and material costs in half on most stripping operations.

KLEM Chemicals 14401 LANSON • DEARBORN, MICH.

Electroplaters Society, sponsor of the event.

### NEW T-K SALES MANAGER INDUSTRIAL UNITS

Announcement comes from Tuttle & Kift, Inc. of the appointment of Fred J. Ewald as sales manager of industrial units.

In making the announcement, John R. Kauffman, T-K sales manager, said that Ewald brings to the com-

pany 22 years of experience in research, development and application of rod-type and tubular electric heating units. He is a graduate of the Illinois Institute of Technology, and was associated with Hotpoint, Inc. for eight years in research and development work. He joined T-K in 1937.

### RAPP JOINS FOOTE MINERAL

Paul E. Rapp, formerly senior chemist in the OPS Industrial

Chemical Division, has joined Foote Mineral Company as assistant treasurer. Initially with Bethlehem Steel, he has been affiliated with several other companies, including Barret Division of Allied Chemical & Dye Corp.

### PENNSALT OF WASHINGTON OPENS CLEANERS PLANT

Fred C. Shanaman, president, Pennsylvania Salt Manufacturing Company of Washington, has announced the opening of a new plant in Portland, Oregon, for production of industrial cleaners.

The new plant will manufacture a complete line of specialty metal cleaners for a variety of metal finishing operations, including plating, enameling, painting, galvanizing, fabrication and assembly, aluminum anodizing and etching, as well as cleaners for the transportation, industrial and general maintenance fields.

The sales-service organization for Pennsalt of Washington is under the supervision of William J. F. Francis, sales manager of Pennsalt's Western specialty chemicals divisions, and headed by Richard A. Snyder at the Los Angeles office, as district sales manager, industrial cleaner division.



*"Paw sez of VEDOC Defense Paint is good fer Army bombs  
an' rockets it should be jest right fer corn-squeezin's."*

We don't go along with Paw's use of Vedoc Defense Paint here. But for Defense Contracts you have—or may get—our government specification finishes will fill the bill. Our World War II experience, combined with postwar research and increased facilities, enables us to offer you the best in Defense Paint. Your orders receive our prompt attention—whether they're for gallons or drums. Write today for samples and prices!

Remember, Ferro Is Set Up to Provide Complete Organic Coatings Service. From the Development of Diversified Protective Coatings—to the Designing and Installing of Efficient Finishing Oven Systems.

**FERRO CORPORATION**  
LIQUID PLASTICS DIVISION  
4550 East 56th Street • Cleveland 5, Ohio



### HOOKER BUILDING NEW CAUSTIC SODA PLANT

Hooker Electrochemical Company plans to build a new \$10,000,000 plant for the manufacture of chlorine and caustic soda at Montague, Michigan, according to R. L. Murray, president. The new plant is expected to be in operation by the end of 1953, with a yearly production rate of approximately 100,000 tons for all products.

### HEADS LINK-BELT SOUTHWESTERN SALES

Link-Belt Company has announced the appointment of William J. Brinkworth as representative of distributor sales, southwestern division, with headquarters at the company's plant in Houston, Texas. He had been field manager of oil field distributor

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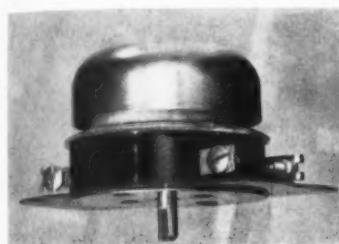
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sales, and will continue in this capacity, but will now also supervise sales through the company's industrial distributors in the southwestern division.

## New Products

### NEW TIMING DEVICE FOR WASHERS AND DRYERS

The Lux Clock Manufacturing Company has announced an important new timing development for manufacturers of washing machines and



dryers. Called the No. 1600 Series Sequence Timer, this timing development employs the use of a simple accessory switch attached to the Lux Minute Minder which was developed more than 20 years ago, and is used on millions of installations.

The spring driven mechanism on the new timer requires no electrical wiring for power. No switch is needed. Compact and unusually simple in construction, the new time generates no heat itself, and is said therefore to have no adverse effect on high ambient temperatures.

Approved by Underwriters' Laboratories for 23 amps-230 volts, 1/3 hp-ac and for most high wattage applications, the new timer is recommended by the manufacturers to carry heavy loads directly, thus eliminating the need for expensive relays on dryers.

### FINISHING PROBLEMS

#### ANSWERED IN NEW BOOK

A handy check list for determining causes and cures of most common finishing problems in the organic finishing field is contained in a new booklet entitled "Common Problems in Products Finishing." A copy of

finish JANUARY • 1952

the booklet may be obtained by writing directly to *finish*.

### Challenge to durable goods producers

→ from Page 35

consumers can pass up without any very severe inconvenience. Some estimates have placed this as high as 40% of our total production of goods and services. This means that the difference between prosperity and depression in the United States has

come to depend on persuading the American consuming public to keep on buying things which, however desirable, the consuming public is under no heavy pressure of necessity to buy. *This means that our prosperity is increasingly in the hands of the salesmen and sales executives as our standard of living mounts.*

Adapted for *finish* from an address before the Institute of Cooking and Heating Appliance Manufacturers, December 4, 1951.

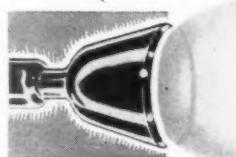
RANSBURG SHOWS THE WAY TO NEW EFFICIENCIES IN PAINTING

Electro-Spray PAINTING

It isn't hearsay. Nor idle chatter! It isn't laboratory test talk. It's a proved fact. Proved on customers' production lines where the new RANSBURG No. 2 PROCESS is achieving new efficiencies never before attained in the field of spray finishing!

#### YES — 99% EFFICIENCY

is being obtained on many installations with the revolutionary, RANSBURG No. 2 PROCESS, and in some instances, efficiency even EXCEEDS 99%. On most production lines, the No. 2 Process will give 25% to 75% more pieces per gallon than ANY other spray finishing system. And the increase is much greater over conventional hand spray!



May we send you a copy of our brochure which describes the No. 2 Process in more detail . . .

### Electrostatic Painting Processes

RANSBURG ELECTRO-COATING CORP.

Indianapolis 7, Indiana





## finish SUGGESTION BOX

### New alkaline de-rusting process has defense possibilities for use in the field

**A** NEW alkaline de-rusting process for steel, cast iron, malleable iron and other iron alloys has been developed. The process is unique in that no acid is required in the procedure with the attendant advantages of no subsequent rusting and no attack on the base metal. High carbon steels that are prone to be discolored even in inhibited acids can be rapidly de-rusted without any trace of

tarnish or attack, it is claimed. Because the process is alkaline in nature and contains detergent materials, it simultaneously cleans and de-rusts.

The solution can be operated in a steel tank at room temperature. The work to be de-rusted is made the cathode in a solution of de-rusting compound for from a few seconds to several minutes depending upon the condition of the surface. Tests made

*Dr. Walter R. Meyer, inventor of the process for de-rusting of steel, is shown with typical parts that have been de-rusted.*



comparing the speed of de-rusting with hot sulphuric or cold hydrochloric acids have shown much faster de-rusting. In one reported test, complete rust and scale removal was accomplished in two minutes as against 45 minutes for acid pickling.

Reclaiming is now suggested for large objects formerly thought to be unuseable because of heavy accumulation of rust. The process is applicable for de-rusting without a heat source being available.

#### Defense possibilities

If de-rusting must be accomplished in the field, such as on board ship or near the battlefield, a complete set-up can be made by means of a steel tank and a source of direct current. The container for holding the de-rusting bath can be steel, stainless steel or even wood in case of an emergency. If protection of the object being de-rusted is desired, zinc can be incorporated in the bath to enable cleaning, pickling and zinc plating all in one tank.

It is felt that this process may prove valuable to the military as, in emergencies, it can be used at sea or in the field with the assistance of a portable generator.

#### Operation of the bath

Parts heavily contaminated with grease should be first degreased, although light oil can be removed in the bath. The parts are then immersed in the de-rusting solution where they are made the cathode for periods of time varying from a few seconds to several minutes depending upon current density and condition of the surface. A wide range of current density can be employed from five to several hundred amperes per square foot. Speed of de-rusting is dependent upon the current density used. The bath is controlled by titration. After de-rusting, the object is clean and bright. Longer treatment does not result in attack upon the metal being pickled. The salts required for the de-rusting bath are supplied as an alkaline powder in steel drums.

**For complete technical details concerning the de-rusting process, write on your company's letterhead to finish.**



*January • 1952*

# safe transit

**FROM ASSEMBLY LINE TO FINAL CUSTOMER**

# A BLUE RIBBON WINNER for Export Packing



**FIRST PRIZE**

Entered by our customer in the competition at the 1951 Industrial Packaging & Materials Handling Exposition packaging contest.

We are proud that our wirebound box, lined with our exclusive product, CRAVENEER, was chosen as the best package in this field.

This box is constructed with a tough oak resawn exterior, strengthened by wires, and has one piece CRAVENEER liners. This makes a strong, rigid, tight box, designed to withstand all the abuse encountered in export handling. Additional outstanding features are low cubic displacement, savings in the tare, and the prevention of pilferage.

This box is the result of cooperation between customer and supplier. Our National Safe Transit Certified Laboratory, supervised by experienced engineers, can assist you with your packing problems.

With several plants, and large inventories of many types of materials, we are able to offer a variety of boxes and crates, such as NAILED, HINGE CORNER, WIRE-BOUND, CLEATED PLYWOOD, CLEATED CRAVENEER, and CLEATED CORRUGATED, including the Watkins sectional and hinged. With all this to offer, and with the cooperation of our customers, we can always design the proper box or crate to meet your requirements for PEACE or DEFENSE shipments, whether DOMESTIC or OVERSEAS.

**CHICAGO MILL AND LUMBER COMPANY**

33 South Clark Street

Plants at: Helena, Arkansas  
Tallulah, Louisiana

• Greenville, Mississippi  
South Fork, Colorado

Chicago 3, Illinois

• Rockmart, Georgia  
Chicago, Illinois



*View in shipping department shows overhead cabinet and top storage conveyor which is over 3 miles long.*

**ADS OUT**

## **Photo story of materials handling and packaging at Whirlpool**

*by Charles J. Phiscator • PACKAGING ENGINEER, WHIRLPOOL CORPORATION*

THIS photo story will show some of the different methods of materials handling and packaging as applied in our plant at St. Joseph, Michigan.

First there are numerous methods of moving materials with such equipment as chisel or hand trucks, pallet

trucks, lift trucks, fork trucks, conveyors, and special trucks. Also, special pallets or carrying devices may be used in conjunction with a truck.

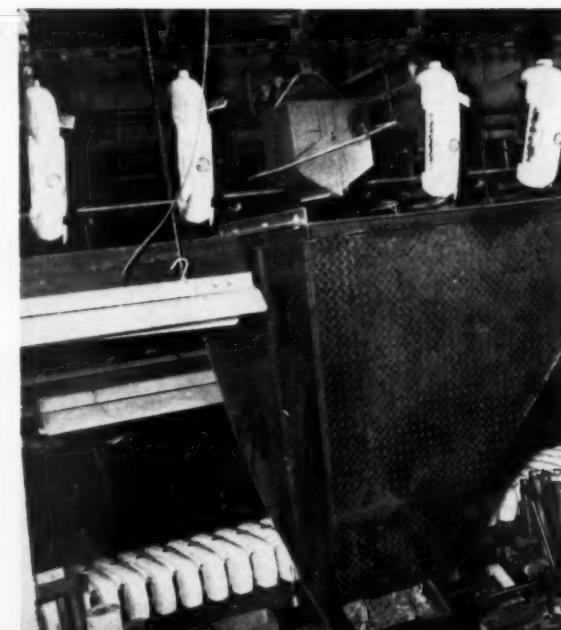
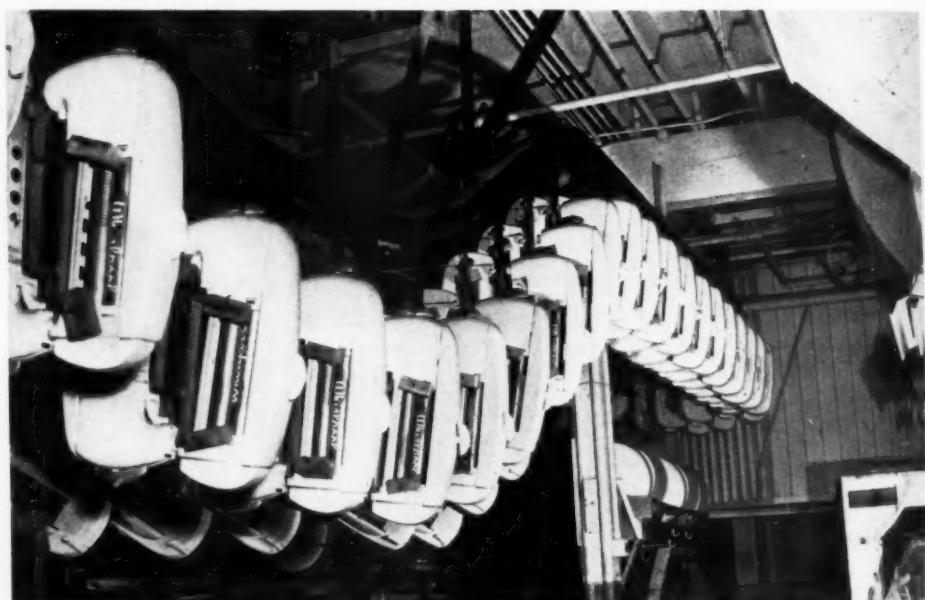
The proper type of equipment for a job depends on distances to be moved, size and weight of material, and quantity. In some areas, such as

the receiving department, two or three types of equipment are necessary. In other places, where large volumes of the small article are handled, special equipment will save a lot of time and money.

Details of the use of the various types of handling equipment accom-



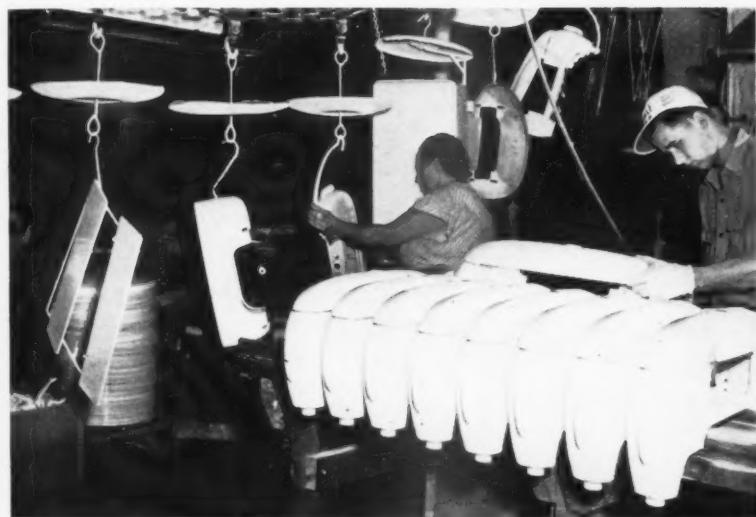
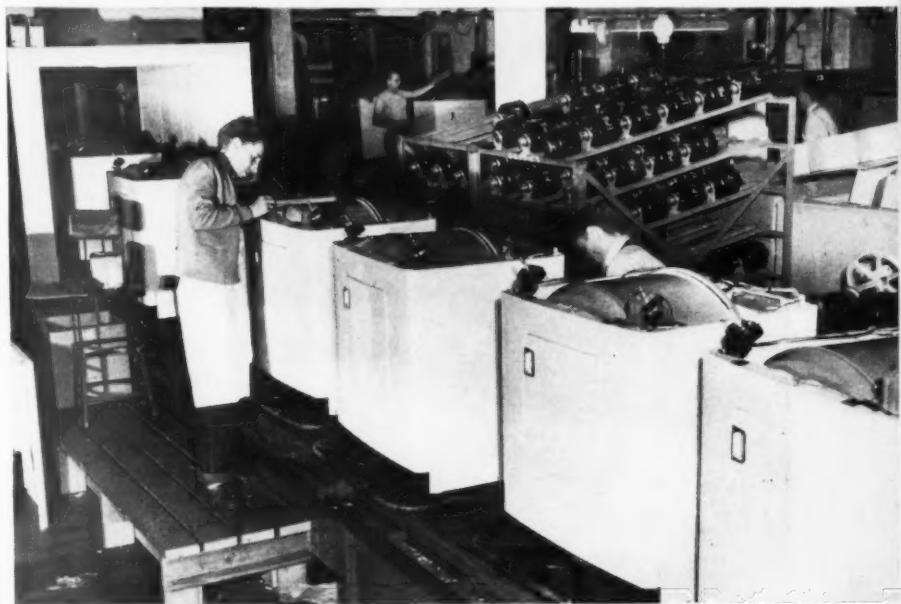
*Left: A special pallet is used for handling wringer frames that are shipped from Waterloo, Iowa, to the Whirlpool plant. Between 500 and 1500 of these frames are used each day. They were originally packed one to a carton and piled loose in a truck. It required 12 man-hours to unload 500 frames. With this special pallet, it takes only one man-hour. It also took one man full time to remove the frames from the carton at the assembly line; now the man on the line unpacks them. Also, with this type of pallet, damage was reduced from 10% to less than  $\frac{1}{2}$  of 1%. The pallets have feet on the bottom, and so constructed that they can be stacked three and four high with safety.*



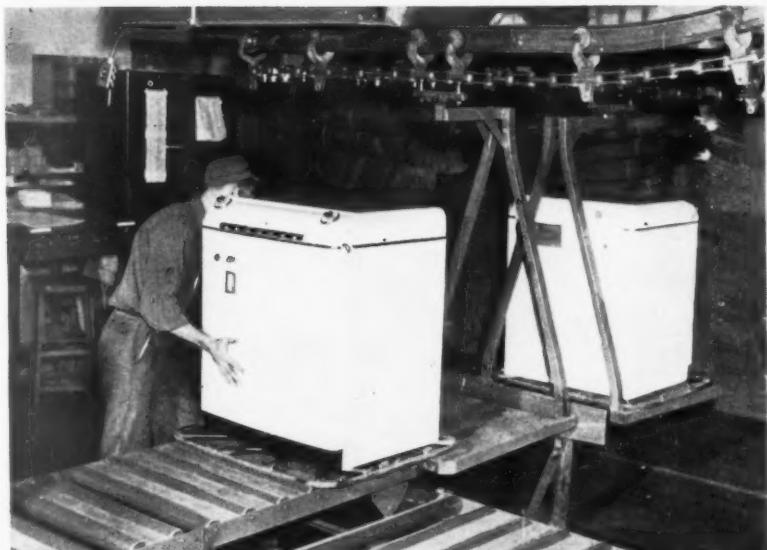
*Above: This photo shows the regular wringer storage conveyor up next to the plant roof. It is a standard monorail conveyor with special hangers to hold two wringers each. This particular conveyor holds 1300 wringers when fully loaded. This type of storage is very economical as it actually uses space that is otherwise wasted, and it saves handling as well as trucking. All overhead conveyors should be kept as high as possible to give clear working space underneath, except at loading or unloading stations; otherwise, valuable floor space is lost.*

*Left: This shows the parts delivery conveyor which is loaded in the receiving room, and the parts dumped in bins over different stations on the assembly lines. The space between the trays and buckets on this conveyor is utilized for surplus wringer storage.*

Right: Notice the special motor rack just behind the dryer assembly line. This rack replaces ten skid boxes, thus saving approximately 100 square feet of floor space. (The motors are received on pallets from the vendor.)



Left: This monorail overhead conveyor is used to take parts through the phosphatizing, flow coating, prime painting, finish painting, and to the different stations on the line. Note the special hangers.



Right: After final inspection, the products are loaded on an overhead conveyor and carried to the first floor for packaging.



pany the following photographs.

In addition, I will describe a three dimensional layout board that has proved invaluable to us in plant layout work and plans for materials handling. This board is made to scale with all dimensions as accurate as possible. Columns and beams are to scale as well as the machinery templates. Otherwise, it would be worthless. (Photo on Page ST-14)

The real value of this layout board comes when you start locating machines, aisles, etc. For instance, you decide on eight (8) foot main aisles and six (6) foot cross aisles. Then when you have the templates all set you decide that the aisles are not wide enough. The change can be made by just moving templates. This takes just a few minutes, or if a drill press should be moved to save a trucking operation, again you just pick it up and move it. When everything is located where it should be, then one drawing can be made. Without a board of this type it may be necessary to make ten to fifteen drawings of even a small department before it is right.

This article was adapted from a presentation before the 1951 SIMIDE Industrial Packaging and Materials Handling Short Course.

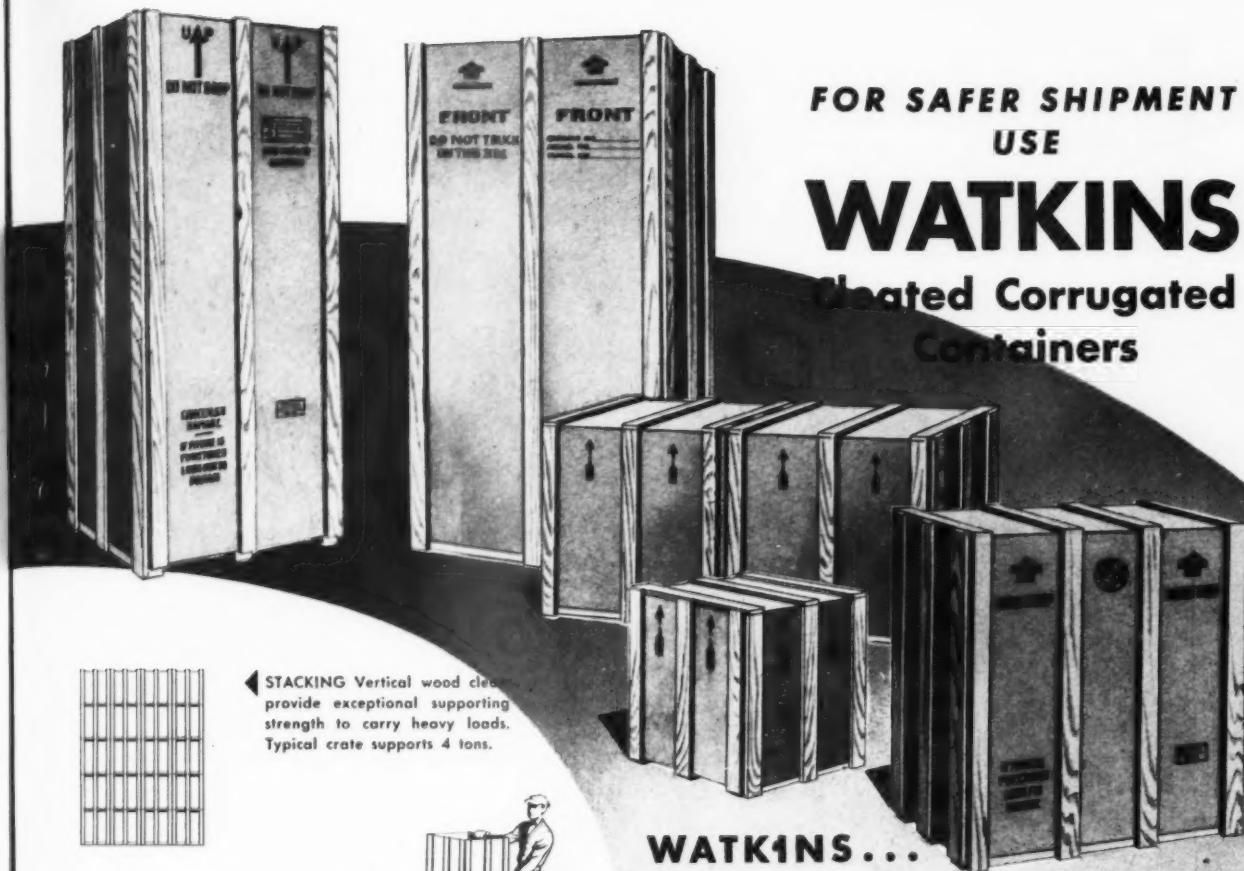
*Left: Because of difficulty in getting truck forks underneath cartons, standard handling methods are very unsatisfactory. When using cartons, it became necessary either to develop a special truck or to put skids under the cartons. The only purpose the skids would accomplish would be for material handling, and would cost 8¢ per carton. With a production of 10,000 machines per week, the cost would be \$40,000 a year. That would buy a lot of equipment; so we went to our regular shop truck supplier and working with them developed the "grab lift." This truck grabs the side of the carton or crate and holds by pressure. It has reduced handling time over 20%.*

*Below: Due to thickness of arms on grab lift truck, machines cannot be stacked closer than 3". Most rows will run 4" apart. For the same reason, it doesn't work out too good for carloading. Here again a special hand truck was developed. Pneumatic tires were discarded for narrow hard rubber tires used in conjunction with spring-loaded wheels. Two small grabs with round head rivets were used for holding. The rivet heads bite into the sides of the carton when the toggle is closed, and thus hold the carton solid. The chisel length was reduced from 3" to 1 1/2" to permit easy removal of the truck without pulling or shifting the machines. With this truck, one man can pick up two machines, haul them into a box car, and locate them accurately.*

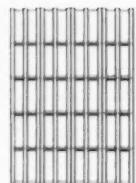


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◀ STACKING Vertical wood cleats provide exceptional supporting strength to carry heavy loads. Typical crate supports 4 tons.



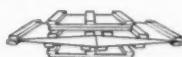
◀ QUICK Assembly line packing is speeded up. Easy to handle. Complete protection for your product.



◀ STRONG All wood cleats securely glued to tube-mat. Laboratory tests prove glued cleats resist weave and distortion better.



◀ STORING Containers are delivered flat (only 3 sections) and closely nested to conserve storage space.



THERE IS A  
**WATKINS**  
CONTAINER  
MADE NEAR YOU



FOR SAFER SHIPMENT  
USE

# WATKINS

## Cheated Corrugated Containers

WATKINS...

is the name to remember when choosing your product shipping containers. A Watkins Container provides complete protection. It is scientifically designed to give greater strength with less unit weight.

Your product will arrive at destination **SAFE** and **CLEAN**. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured. No dust or dirt can reach your product and the smooth, staple-free interior protects fine product finishes.

Assembly time is reduced to a minimum. The 75% assembled containers save labor...save time...save expense.

The "Traveling Billboard" feature of Watkins Containers is an advertising feature to consider. Your advertising message can be printed in two colors on all four sides. Ship and advertise the "Watkins way".

These companies build WATKINS containers

CORNELL PAPERBOARD PRODUCTS CO. 1514 E. Thomas Ave., Milwaukee, Wis.  
COZIER CONTAINER CORP. 446 East 131st Street, Cleveland, Ohio  
CRATE-RITE MFG. CORP., Division of Pacific Ports Ind. Inc., 10901 Russel Street, Oakland, California  
DURA-CRATES, INC. 940 East Michigan Street, Indianapolis, Indiana  
GENERAL BOX CO., 500 N. Dearborn St., Chicago, Illinois, and 16th and Maple Sts., Louisville, Kentucky  
HEMB & MARTIN MFG. CO. 1514 E. Thomas Ave., Milwaukee, Wis.  
ILLINOIS BOX & CRATE CO. 811 Center Street, Plainfield, Illinois  
KIECKHEFER BOX & LUMBER CO. 1715 West Canal Street, Milwaukee, Wisconsin  
LANE CONTAINER CORP. 10212 Denton Road, Dallas, Texas  
LEWISBURG CONTAINER CO. 243 Singer Street, Lewisburg, Ohio  
LOVE MFG., INC. 608 South Commerce Street, Wichita, Kansas

— an inquiry to any of these companies will get prompt attention —

The • WATKINS CONTAINER • Manufacturers

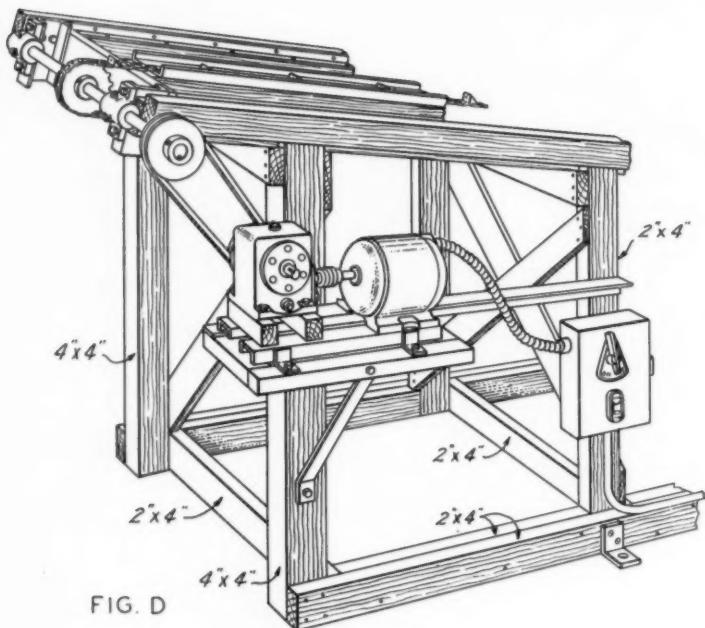


FIG. D

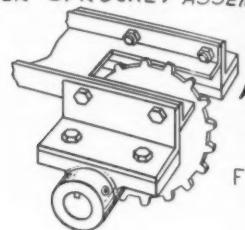
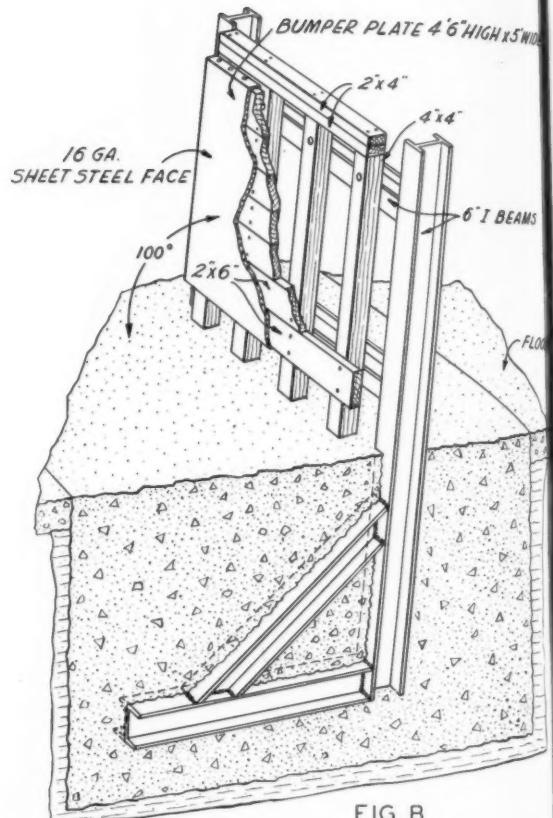


FIG. F



16 GA  
SHEET STE

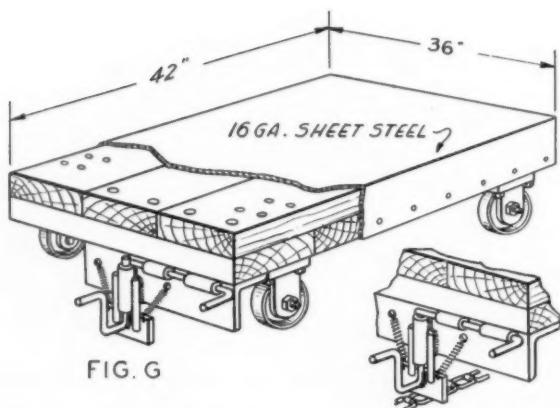


FIG. G

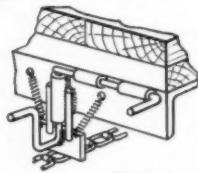
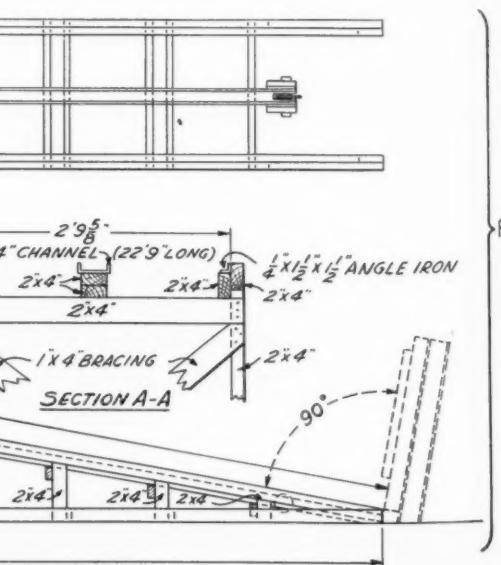


FIG. H



## **Detailed construction drawings for the deluxe incline impact tester.**

# A deluxe model incline impact tester

details of design and construction of an incline impact test machine  
as used for National Safe Transit pre-shipment testing

by M. A. Ritchie • GEO. D. ROPER CORPORATION, ROCKFORD, ILLINOIS

THE following description and accompanying drawings and photographs give the essential details for constructing a permanent, easily operated, Conbur incline impact tester.

Our packaged products testing program has firmly implanted the hazards of transit in the minds of our employees. It also keeps us alert to the fact that the safe shipment of our products is a must.

Weakness in packing design or materials can be uncovered and corrected. Excessive packaging can be minimized. More uniform methods of packaging can be attained. Better control over material and workmanship has been realized.

Whether or not new products, designs, materials, etc. will ship with a minimum of damage can be determined while they are still in the planning stage. All this can be determined at a minimum of time and cost in our plant and with our own personnel in attendance.

## Construction details

Overall dimension 31' long, 3' wide. Length of run for dolly 25' 10" with a 10° incline. Incline or ramp section is constructed of 2 x 4's and 4 x 4's and enclosed with sheet steel. Cross bracing material is 1 x 4" (see A). The bumper is constructed of 2 x 6" hardwood planking covered with 16 ga. sheet metal, backed up by hardwood 4 x 4's, and supported by 6" I-beams embedded in concrete that is 9' square by 6' deep (see B).

Illustration D shows the power unit which consists of a  $\frac{3}{4}$  hp, 1750 rpm electric motor and a speed reducer of 20 to 1 ratio. A chain drive is used between the reducer and drive shaft.

A Palmer Bee detachable class "D" malleable iron chain with a "C-1"

attachment each foot, and a #4-49 P.D. Palmer Bee sprocket mounted in the center and at each end of the Conbur is used for drawing the dolly up the ramp (see A, D and F).

The dolly is constructed of two crossed layers of 2 x 6 hardwood planking, covered with 16 ga. sheet steel. The four casters are #60-307 regular duty, rigid-type NI steel wheel from Service Caster Co. (see G). Trackage for dolly is  $\frac{1}{4}$ " x  $1\frac{1}{2}$ " x  $1\frac{1}{2}$ " angle iron (see A, Section AA).

Trip mechanism for dolly is constructed of bar steel, pipe, angle iron and two tension springs. Illustration G shows the trip in the unlocked position. Illustration H shows it in the locked position.

To engage trip with chain lug, push

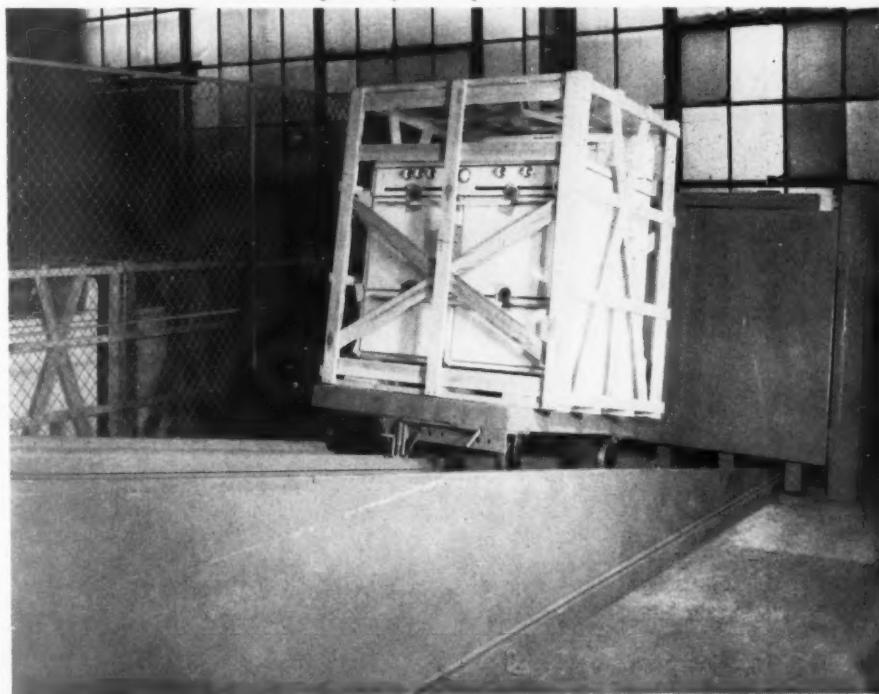
the latch lever down and the latch lock in.

To disengage trip merely pull the latch out. The two springs will then disengage the latch lever from the chain lug.

All of the test equipment is located in an enclosed area adjoining our assembly and packaging department.

With a  $\frac{1}{2}$ -ton electric hoist on an L-shaped monorail, packages can be transferred from floor to vibrator or Conbur by one operator. All of our packages can be turned over or placed in any position on Conbur dolly or vibrator by one operator using the hoist and a pair of lifting hooks. With this arrangement and equipment, only one operator is required for all of our testing. →

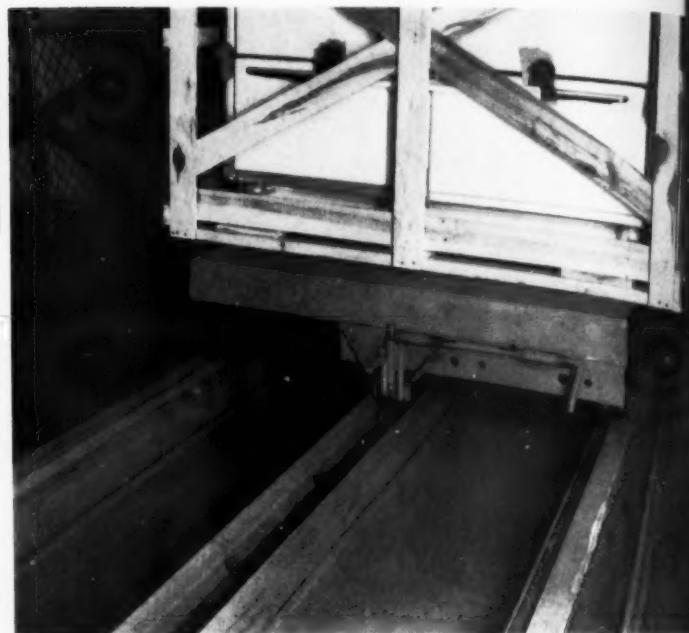
*Conbur tester shown with release latch in closed position. The I-beams are embedded in 9' square by 6' deep concrete base.*



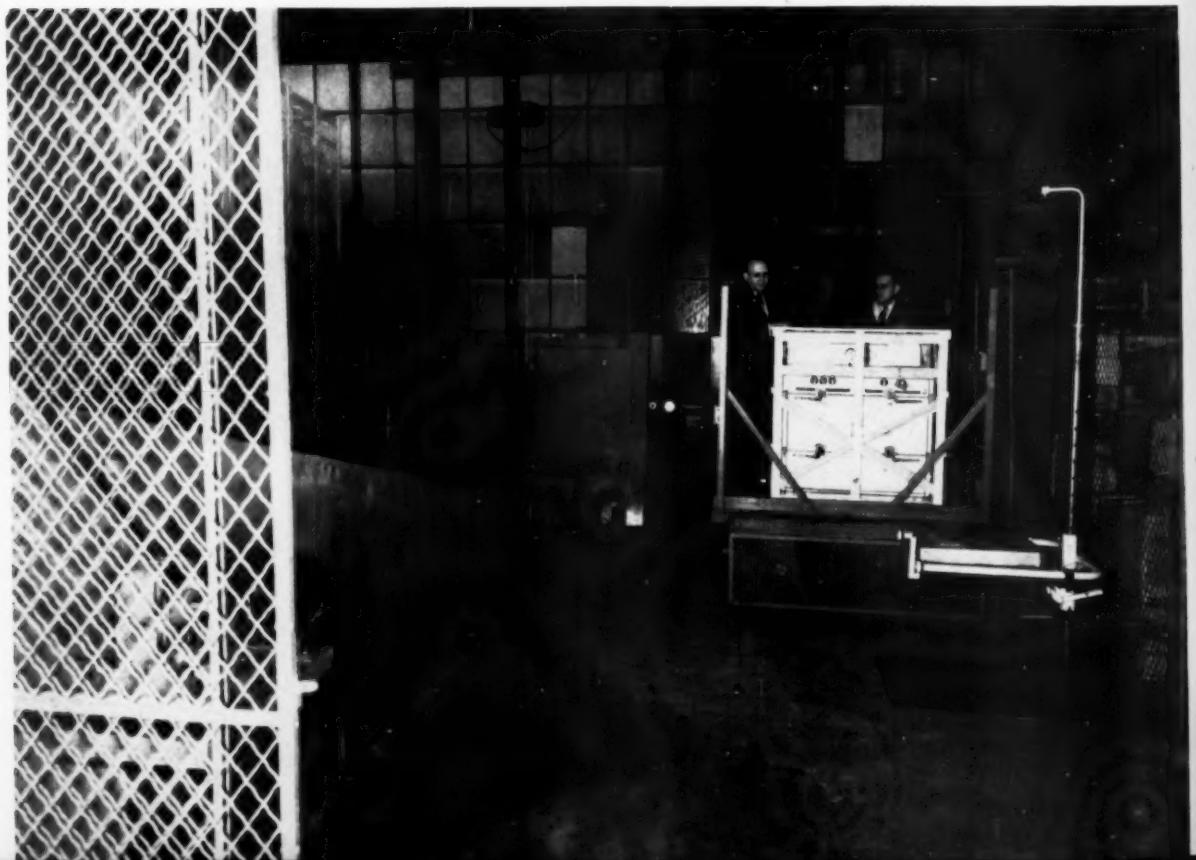


*Above: Drive and control switch on the Conbur incline impact tester.*

*Below: This view of the Conbur tester installed in the Roper plant shows the drive chain and the release latch for the dolly in the open position.*



*Below: Carroll Menne (left), chief inspector, and Maurice A. Ritchie, engineering coordinator at Roper, are shown in the special enclosed area housing the packaged product testing equipment. The men stand behind the vibration tester. At left is the Conbur tester, with drop tester in right foreground.*



1901-1951

FIFTY YEARS OF BETTER BOXES

“THE *American* WAY”

★ A Half-Century of Progress! From early wood box pioneer, to one of the nation's "Big 5" wood container designers and manufacturers. Today, American leads in engineered protection and economy. Over 5,000 acres of company-owned timber tracts supply our two great plants—producing wirebound shipping boxes, crates, palletized tote boxes, cleated fibreboard and nailed wooden boxes in any quantity.

Send for 50th Anniversary Brochure.

THE *American* BOX COMPANY

910 W. 3rd Street, Cleveland 13, Ohio. Phone: SU 1-5200 ★ Marion, South Carolina

## ASTM MEETING, FEBRUARY 3-8

A meeting of Committee D-6 on Paper and Paper Products will be held in New York City, February 3-8, it was announced by the American Society for Testing Materials.

## JOHN CONWAY DIES

John Conway, production manager, Corrugated Division of General Box Company, Louisville, Kentucky, died November 30. He was a well-known figure in the corrugated box field for more than 40 years.

## GENERAL BOX OFFICE, LAB.

### OCCUPY NEW QUARTERS

The executive offices and laboratory of General Box Company have been moved from 500 N. Dearborn St., Chicago, to a new building in Des Plaines, Illinois. Direct phone lines to Chicago were retained by the company.

Located on a four-acre site near the intersection of Miner Street

(Dempster Road) and Busse Highway, the company's new 23,000-square-foot, one-story structure was planned and built to provide the finest possible office area and to house a completely equipped laboratory for the design and testing of all types of shipping containers.

All offices are air-conditioned, and the entire building is acoustically treated.

The building houses General Box's executive office and laboratory only; no manufacturing will be done on this site. The company's products, a full line of shipping containers, are manufactured at plants located in ten major cities east of the Rockies. The 29-year-old firm's major products are wirebound and corrugated shipping containers.

## BUCUSS HEADS NEW ACME STEEL PRODUCTS DIVISION

John G. Bucuss, former general manager of the strapping division, Acme Steel Company, has been



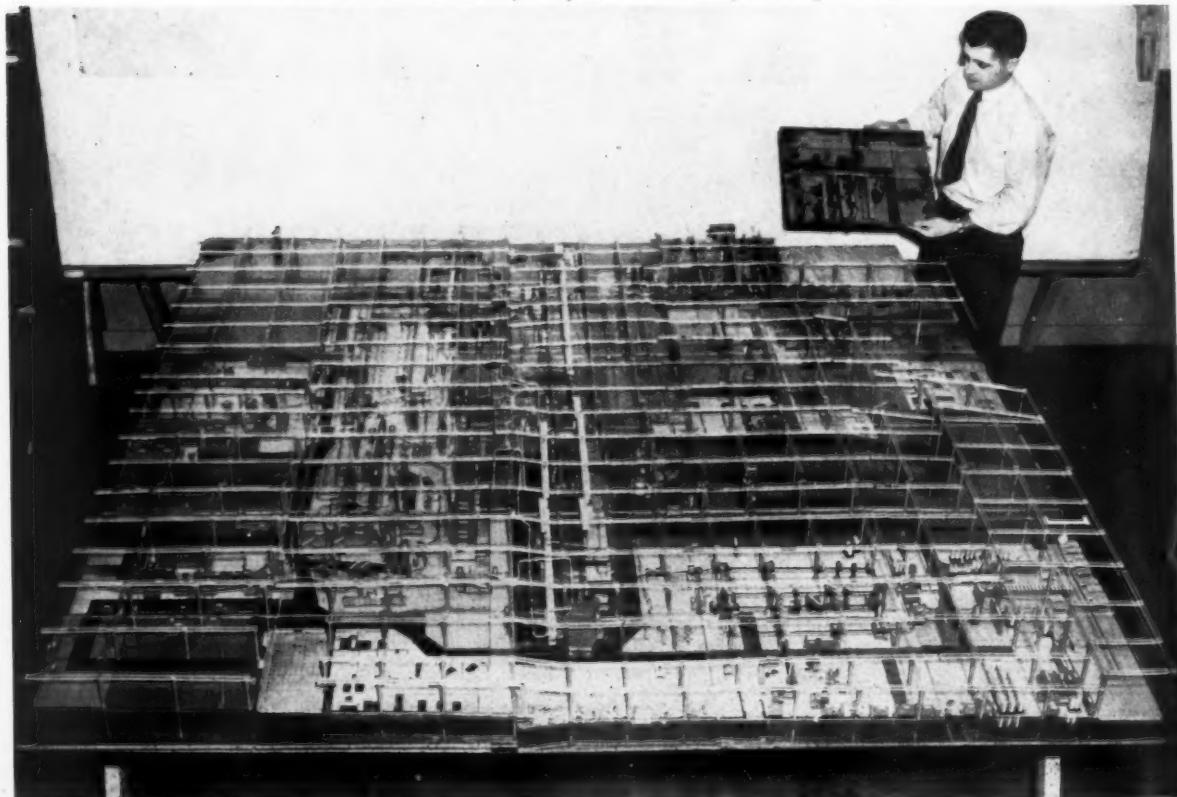
JOHN G. BUCUSS

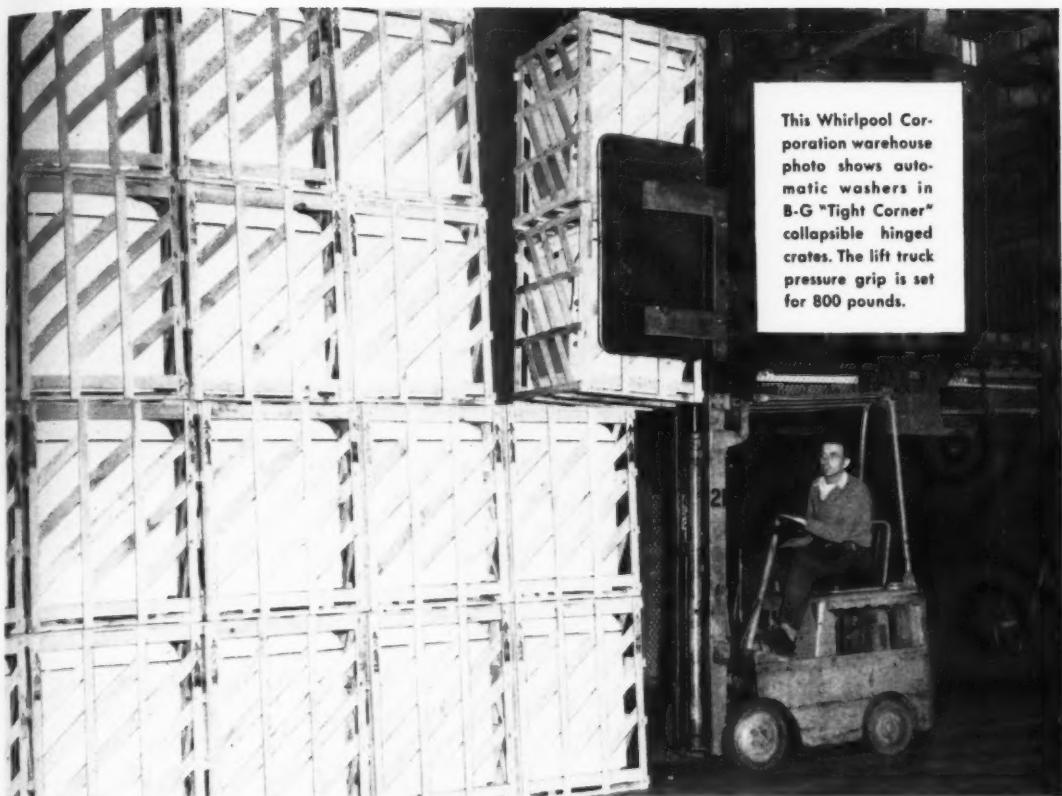
named president of the new Acme Steel Products Division, it was announced by Carl J. Sharp, president of the parent firm.

Assisting Bucuss as vice president, stitching wire, is F. Raymond Grove, Sr., former general manager of the stitching division.

Percy L. Dafoe, previously central area manager, was appointed vice

**Three-dimensional layout board** — at Whirlpool plant is a great aid in planning materials handling operations. This board is made to scale with all the dimensions as accurate as possible. Columns and beams are to scale as well as the machinery templates. (See story on Page ST-5.)





This Whirlpool Corporation warehouse photo shows automatic washers in B-G "Tight Corner" collapsible hinged crates. The lift truck pressure grip is set for 800 pounds.

check

## B-G → CRATE STRENGTH

### for STACKING... for HANDLING

B-G "Tight Corner" collapsible hinged crates have built-in strength for stacking—and—strength to withstand all normal handling and transit hazards. They are engineered to carry your particular product safely.

The "Tight Corner" hinged crate is a time-saver too—it comes to you 65% assembled. Just nail top and bottom in position, using factory pre-drilled nail holes.

We will help you find the right answer to your shipping problems for civilian goods or for defense. Write us now and let us show you how to save money and reduce shipping losses.



Kraft  
Crate



Tight Corner  
Hinge Crate



Pallets



Pallet  
Boxes



Wooden  
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Six Section  
Panel Crates

MILLS: ARKANSAS GEORGIA WISCONSIN MINNESOTA ILLINOIS

always check

Write for complete details and prices to...

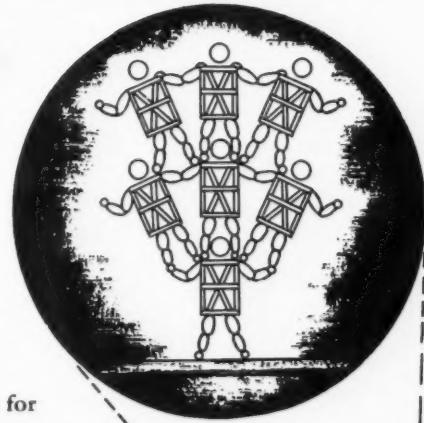


**BIGELOW-GARVEY**  
lumber company

General Office and Laboratory

320 W. HURON STREET • CHICAGO 10, ILLINOIS

Manufacturers of  
washing machines,  
ranges and all types  
of home appliances  
are turning to the "Tight  
Corner" collapsible crate  
for assurance of safe deliv-  
ery of their finished products.



ST-15

president and general sales manager of the new division.

The new division will operate and function as an independent sales and distributing company for steel strapping, tools and accessories, stitching wire and equipment, as well as other related industrial strip steel products. Previously, these products were sold through the company's internal

Consumer Products Division. Sales of strip steel and special products will remain with the parent company as well as manufacturing and production operations, Mr. Sharp said.

Bucuss is the past president of the Material Handling Institute, and a member of the Loading Research Division of the National Safe Transit Committee.

## AMA PACKAGING EXPOSITION IN ATLANTIC CITY, APRIL 1-4

The 21st National Packaging Exposition to be held in Atlantic City from April 1 to 4, will be the greatest presentation in the history of the event, it was announced by the American Management Association, sponsor of the Exposition and the Conference on Packaging, Packing and Shipping held concurrently with it.

Six weeks after issuance of the official floor plans, AMA stated, the exhibit area reserved by 271 exhibitors exceeded by almost exactly 20% the final total area of the 1951 exposition, which in turn had been the largest ever held. The exposition will occupy both levels of the Atlantic City Auditorium. The newest developments in machines, equipment, materials and services for pack-

aging, packing and shipping will be shown. A significant development in the show, it was pointed out by AMA, will result from a substantial increase in the showing of materials handling equipment. Hitherto, the presentation of such machines—and particularly their active demonstration—was severely limited by floor load factors on the Boardwalk level of the Auditorium. These limitations are removed through use of the lower level.

In addition, it was stated, plans are being formulated for demonstration of special materials handling techniques currently of outstanding importance to industry.

*Among the personnel of the Exhibitors Advisory Committee for the Exposition are: Robert D. Handley*

## New Literature

### FREE BOOKLET ON APPLIANCE CARLOADING

A free two-color booklet includes test information and practical results



ST-16

of extensive carloading and load-testing experiments for packaged home appliances. Included are a series of four case histories from leading appliance manufacturing plants, each illustrated with loading photographs and detailed drawings showing carloading methods.

Write on your company letterhead to *finish*, 360 N. Michigan, Chicago 1, Illinois, requesting "Safe Transit Carloading Booklet."

A new four-page folder, "Stacks Up Better for Less," contains complete details of construction features of a new lightweight "Palletized" container for storage and materials handling. Specific applications are illustrated. Ask for "Palletized" tote-box folder.

(chairman), advertising manager, Sylvania Division, American Viscose Corp.; N. A. Fowler, director of sales and research, General Box Company; Paul Meelfeld, assistant vice president, The Hinde & Dauch Paper Co.; and Ben M. Williams, manager of sales promotion, Gaylord Container Corp.

*Among the members of the Packaging Conference Planning Council are: Paul Vogt, AMA vice president in charge of the Packaging Division, and coordinator, package engineering and development, manufacturing policy division, General Electric Company; R. de S. Couch, director, NPA Container and Packaging Division; Henry J. Howlett, president, Container Laboratories, Inc.*

W. B. Keefe, packaging engineer, Westinghouse Electric Corp.; Donald W. Pennock, factory engineer, Carrier Corporation; and Jack L. Ware, packaging and quality standards, Sears, Roebuck & Company.

### HENDRICKS TO NEW POST WITH 3M RESEARCH LAB.

Promotion of Dr. J. O. Hendricks to the newly-created post of associate director of the Minnesota Mining & Manufacturing Co. central research laboratories was announced by Dr. H. N. Stephens, central research director.

Hendricks joined 3M in 1936 after receiving his doctorate at the University of Illinois. He became head of the firm's organic chemistry section in 1942 and a year later took charge of the colloid section. He was an assistant director of the central research laboratories since 1947.

Dr. Stephens also named Dr. Matthew W. Miller and Dr. H. M. Scholberg as assistant directors.

### PACKAGING STANDARDIZATION HELPS SYLVANIA LOWER COSTS

With an eye at producing better fluorescent lighting fixtures at lower costs, in the face of rising prices, the Lighting Division of Sylvania Electric Products, Inc., Wheeling, W. Va., recently reviewed all phases of manufacturing operations before bringing out their 50th anniversary

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series. One phase of their operations which aided in achieving their goal was the standardization of packaging materials (story in February *finish*).

#### EAGLE FOUNDRY CERTIFIED BY SAFE TRANSIT COMMITTEE

The National Safe Transit Committee has announced the certification of Eagle Foundry Company, Belleville, Illinois, bringing to 93, the number of manufacturers cooperating in the National Safe Transit Program designed to combat packaging and shipping losses to home appliances and allied metal products.

#### PHILADELPHIA ENGRS. HEAR OF PACKAGING, MATERIALS HANDLING AT HARVESTER

At the November meeting of the Philadelphia Section of the Society of Industrial Packaging and Materials Handling Engineers, R. F. Weber, general supervisor, materials handling research, International Harvester Company, Chicago, said that the cost of shipping for his company exceeds \$5,000,000 a year.

This figure, said Weber, includes no labor costs, and covers the cost of packaging, packing, materials handling and freight costs. When broken down into individual costs, that for packaging and packing equals the cost of materials handling, whereas loading costs figure about 18% of the total.

In Weber's department there are 15 employees, and the estimated cost of maintaining the department, he said, was approximately \$80,000 a year from which it is estimated the company derives annual savings of better than a half million dollars represented by cost reductions. (Read "How International Harvester Answers Materials Handling and Product Protection Problems," by P. L. Houser and R. F. Weber, July 1949 *finish*.)

Preceding Weber, who had been introduced by Dean Roundtree, of Temple University, the Section treasurer reported a sizeable cash balance, which the membership thought spoke well for the Philadelphia SIPCME Section's being in operation for less than a year.

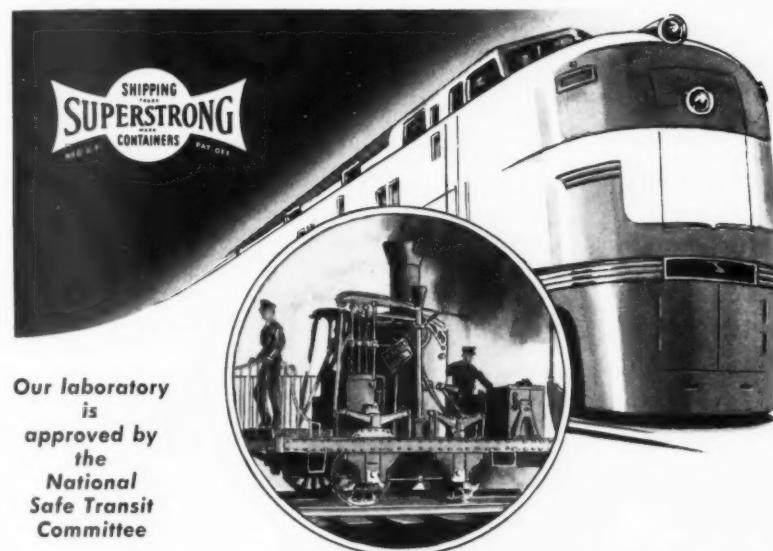
*finish* JANUARY • 1952

#### FRIGIDAIRE TRAFFIC MGR. APPOINTED CHAIRMAN OF SAFE TRANSIT CARRIER COORDINATING DIVISION

It has been learned that J. E. Haynes, traffic manager, Frigidaire Division, General Motors Corporation, Dayton, Ohio, has been appointed to the important post of chairman of the National Safe Transit Carrier Coordinating Division.

In an earlier statement concerning the functions of the Carrier Coordinating Division, NST Chairman Bisbee outlined one of its important

aims. He stated that the proposed plan would serve as a means to carry information about National Safe Transit to the individual carriers and at the same time explain to the manufacturers the work of the carrier groups in promoting the program. He stated that the NST program is strengthened through the continued fine teamwork between carriers and manufacturers.



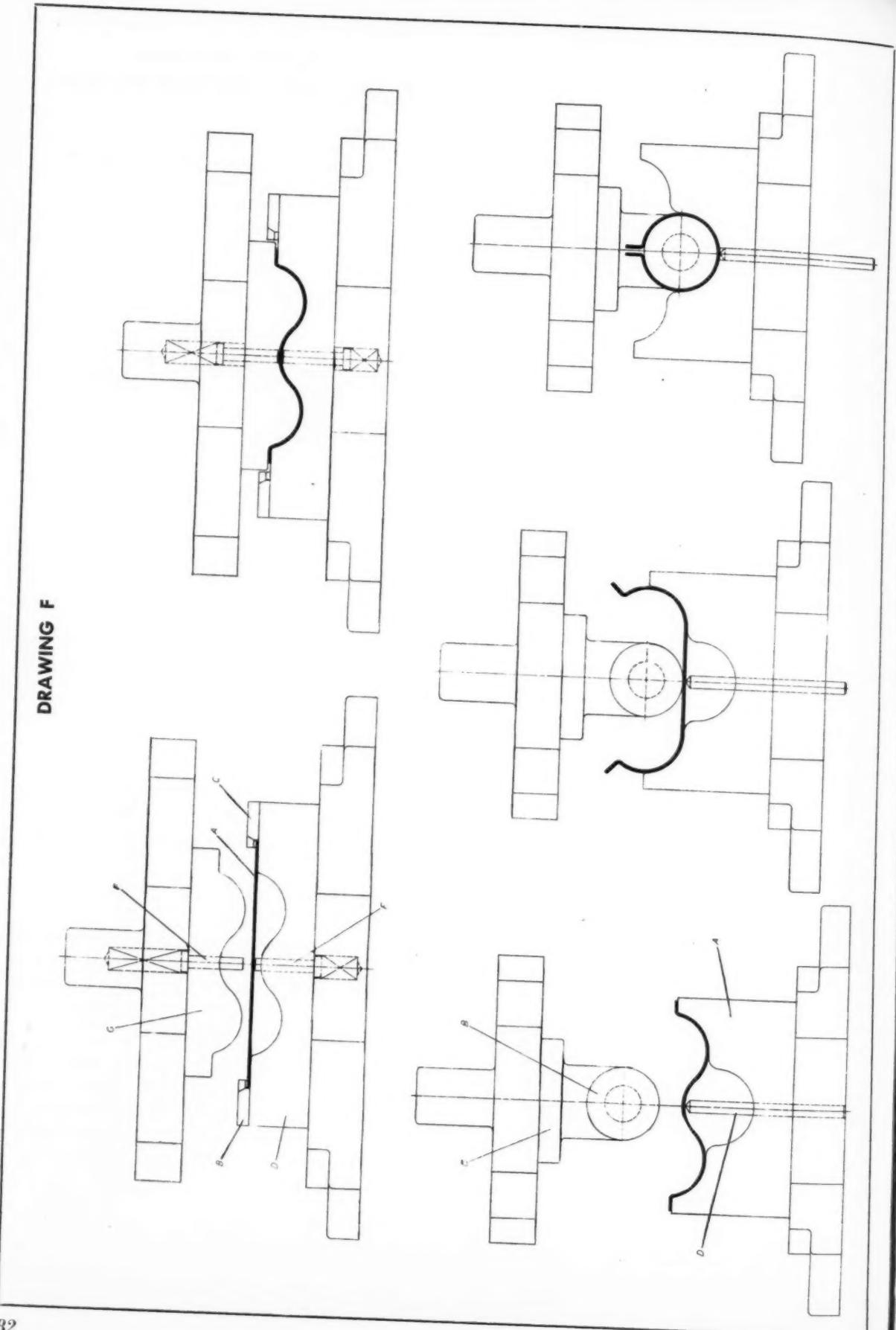
If you should check a list of companies operating in the United States in 1855 — the year of our founding — you would find that very few indeed have been able to survive the economic upheavals of nearly a century. Survival is conditioned upon maintaining high quality standards at all times.

SUPERSTRONG boxes and crates have always enjoyed a reputation for dependability because of their sturdy construction . . . SUPERSTRONG container design has been quick to adapt to changing shipping conditions . . . SUPERSTRONG service is undergoing constant expansion in order to handle customer requirements more quickly and efficiently.

You can't go wrong with SUPERSTRONG.

RATHBORNE, HAIR AND RIDGWAY BOX CO.  
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

DRAWING F



## The effect of mill tolerances on the finished sheet metal stamping

(Continued from Page 25)

operations. The blank is cut to length and pierced in the first operation; it is formed to shape, as shown in **Drawing E**, in the second operation; and is finish-formed in the third operation.

The shape of the piece-part, as formed in the second operation, is very important. The distance *X* can be found by multiplying the sum of the inside diameter of the piece-part plus one thickness of stock, by 1.414. The radius of the center bend should be equal to half the diameter of the inside of the piece-part.

The first bending operation is performed in an ordinary, solid type die which is equipped with gripping pins to prevent the blank from slipping (**Drawing F**). Blank A is placed in gages B and C, and rests on lower die-block D and pin E. When the slide descends, the blank is gripped between pins E and F and is formed by blocks D and G. Pin F should have a stronger spring behind it than pin E. Pin F will then force pin E down and prevent the piece-part from attempting to form over the lower spring-pin instead of over the die.

The piece-part is then placed in the die shown in **Drawing F**. The three views show the die in different positions of the press stroke. The main parts of the die consist of die-block A, horn punch B, and pin D. Die-block A is machined to conform to the shape of the piece-part as it comes from the first forming operation. Therein lies the secret of producing truly round piece-parts; for this form not only serves as a nest to gage the piece-parts, but during the final forming operation it serves to curl or otherwise protect that portion of the circle which is formed in the preceding operation. How this is accomplished is shown in the center illustration. The previously formed portion of the piece-part is "steered" by the curling action until the center hump has been straightened out and the punch is ready to form the lower half of the piece-part. In the third illustration at the right, the

operation is shown completed. The piece-part is carried up with the punch and is stripped from the horn by hand.

If circular parts are properly processed as described, and the dies are designed as illustrated in the drawings, the variation in the metal thickness between blanks will have little effect on the dimensions and requirements of roundness for stampings of this type.

## The steel supply picture for 1952

(Continued from Page 26)

a balloon, for every steel user sees himself as supplying a large part of the market represented by that 1%. Let the situation reverse itself, and that balloon bursts in a hurry.

Make no mistake, steel is today in short supply, relative to present needs as they exist in the minds and production schedules of steel consumers. Also, make no mistake—the point of balance in many products is closer than may appear. Let us pass the peak in the current race to expand productive capacity of all American industry, the greatest capital goods boom in our history; let military expenditures expand less rapidly than anticipated; let the government go a little too far in placing limitations on various civilian industries; let it be a little too slow in removing restrictions at the proper moment; let consumers become complacent about future supply of the products they desire; let any of these things happen and supply becomes more nearly adequate. The steel production rate could soon fall from its present lofty height.

### Evidence of accumulating steel inventories

There is another element which may prove most important of all. There is considerable evidence that steel inventories are accumulating in many places. Some are in warehouses; most are in manufacturing plants, partly in the form of parts or goods-in-process. Most of these inventories are not excessive. Some are unbalanced. Some were built up during the switch from civilian to military production. Nevertheless, we shall soon cease building them further. That means additional steel will move into consumption, and we then find that we will not be at such a high

rate of actual steel usage. Adequate inventories rapidly become heavy inventories if the operating levels of steel-consuming industries fall.

*I am not attempting to predict a collapse of steel demand. I am merely pointing out that there are existing factors which may well bring over-all steel demand into balance with over-all supply during the year 1952. . .*

What can industry do to make a constructive contribution in the present situation?

### Help get in the scrap

In the first place, *help get in the scrap*. Our own mills are operating with an extremely limited supply of steel scrap, only two or three days in some cases. The rest of the industry is also in a most precarious position in this respect. I know that you have heard this appeal before, and I fear that its reiteration is becoming tiresome; but it is of extreme importance.

In the second place, *cooperate with controls*. Understand them and comply with them. Give those in Washington who are administering this work prompt and accurate reports. Their job is tough enough. Don't make it any more difficult. Help make controls work, for their failure can only result in more restrictive, more arbitrary, and less workable controls.

Thirdly, *depend as little as possible on Washington*. If you can operate without special help, by all means do so. It is the willingness of businessmen to lean on Washington for help in emergency situations which exaggerates the impression of stringency. I have been on the receiving end of many appeals. I know how easy it is for policy to be formulated based

## ADVERTISERS' INDEX

	PAGE
ACME ALUMINUM FOUNDRY CO. ....	15
AMERICAN CHEMICAL PAINT COMPANY ....	6
AMERICAN BOX COMPANY, THE ....	ST-13
ARMCO STEEL CORPORATION ....	1
BIGELOW-GARVEY LUMBER COMPANY ....	ST-15
CARBORUNDUM COMPANY, THE ....	45
CENTURY VITREOUS ENAMEL COMPANY ....	12
CERAMIC COLOR & CHEMICAL CO. ....	2nd COVER
CHICAGO MILL AND LUMBER COMPANY ....	ST-2
COWLES CHEMICAL COMPANY ....	3rd COVER
DETREX CORPORATION ....	57
DETROIT BRASS AND MALLEABLE WORKS ....	55
DEVILBISS COMPANY, THE ....	8
EQUIPMENT ADVERTISING ....	56
FAHRALLOY COMPANY, THE ....	56
FERRO CORPORATION ....	50 & 51, 4th COVER
FOOTE MINERAL COMPANY ....	18
FRANTZ COMPANY, INC., S. G. ....	58
GLIDDEN COMPANY, NUBIAN DIVISION ....	17
HARSHAW CHEMICAL COMPANY, THE ....	2
HOMMEL COMPANY, THE O. ....	38
INGRAM-RICHARDSON, INC. ....	46
LIQUID PLASTICS DIVISION, FERRO CORPORATION	62
MACCO PRODUCTS COMPANY ....	20
McDANEL REFRACRY PORCELAIN COMPANY ...	14
MILLS ENGINEERING COMPANY ....	10
KIMBERLY-CLARK CORPORATION ....	ST-4
KLEM CHEMICALS, INC. ....	61
NAGEL-CHASE MANUFACTURING CO., THE ....	52
NEW MONARCH MACHINE & STAMPING CO. ....	7
NUBIAN PAINT & VARNISH CO., DIV. OF GLIDDEN..	17
OWENS-CORNING FIBERGLAS CORPORATION ....	59
PEMCO CORPORATION ....	5
RANSBURG ELECTRO-COATING CORP. ....	63
RATHBORNE, HAIR & RIDGWAY BOX CO. ....	ST-17
REPUBLIC STEEL CORPORATION ....	11
ROBERTSHAW-FULTON CONTROLS COMPANY....	54
SHERWIN-WILLIAMS CO., THE ....	9
SIGNODE STEEL STRAPPING CO. ....	ST-3
SPRA-CON COMPANY, THE ....	16
TITANIUM PIGMENT CORPORATION ....	4
VERSON ALLSTEEL PRESS COMPANY ....	41
WATKINS CONTAINER MANUFACTURERS ....	ST-9
WEBB COMPANY, JERVIS B. ....	53
YODER COMPANY, THE ....	60

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**"I saw your ad in finish"**

largely on the exceptions, the emergencies, the hardship cases, and not on the average experience.

Finally, and most important, *don't forget that controls must end, and end completely*. Those in authority in the government have stated repeatedly that their aim is to remove controls as soon as possible. I believe them. Let's all help marshall business and public opinion to the point where it will be politically expedient, when it is economically feasible, to eliminate all government control. . .

Adapted for *finish* from an address before the Institute of Cooking and Heating Appliance Manufacturers, December 3, 1951.

### NEMA → from Page 40

ture, these programs should be carried on.

This "indirect" approach to the consumer, begun many years ago, results in essential education in the advantages of electric appliances, the Sections believe, rendering those who come into direct contact with consumers, better equipped and informed to serve them.

### NEMA honors past presidents and 50-year industry men

Fifty-year certificates were awarded to three electrical manufacturing pioneers, and silver trays were presented to six of NEMA's past presidents by the Association. The presentations were made by C. W. Higbee, 1951 president of NEMA.

The pioneers who were awarded 50-year certificates were: J. M. Gilchrist, senior vice president, Federal Enterprises, Inc., Chicago; A. F. Hills, president, Crouse-Hinds Company, Syracuse, N. Y.; and J. H. Kliegl, president, Kliegl Brothers, New York City. (Mr. Hills was a director of the Associated Manufacturers of Electrical Supplies, which merged with other organizations to form NEMA.)

The six past presidents who were honored included: Gerard Swope, first president of NEMA, 1926-28; Clarence L. Collens, 1929-31; J. H. Trumbull, 1931-32; F. R. Fishback, 1930-37; D. Hayes Murphy, 1937-38; and C. L. Peirce, Jr., 1938-39.